# EDITORIAL

Railway Age

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**Box Cars in Camp Service**

It has long been the general practice of many roads to house their maintenance of way floating gangs in box cars. This equipment lends itself readily to such service because of the ease with which it can be moved from point to point as the work progresses. In general, the cars utilized for this purpose are those which have become obsolete for revenue service, but as several hundred and even thousands of cars are frequently required for this service on a single road the demand sometimes exceeds the amount of such equipment available, with the result that cars suitable for revenue business are withdrawn from service. In normal years the season in which equipment of this character is used in maintenance work is one of light traffic when the demand for such cars in revenue service is lightest and a surplus usually exists. This year these conditions are changed and the demand for cars so far exceeds the number available that every car is being utilized, whether obsolete or not. As a result, the withdrawal of any car for revenue service not only results in a loss of the earnings what would accrue from that car, but decreases the ability of the railroad to handle the traffic of the country to that extent. Maintenance-of-way officers are, therefore, confronted with a public as well as a financial necessity for curtailing their demands for such equipment to the minimum. Several roads are resorting to the use of small portable houses to meet this condition. This expedient is entitled to more general consideration, for if all of the cars normally used for the housing of maintenance gangs are released for revenue service it will increase the traffic-carrying ability of the roads materially and will be of direct assistance in tiding them over the present crisis.

**Attend the Fuel Convention**

Attendance at the so-called minor association conventions by those directly interested in the departments which they represent has always been a valuable means of broadening the viewpoint of the individual and raising the standard of service of the department. During the period of Railroad Administration control not only was this fact clearly recognized and acted on, but advantage was taken of the value of convention attendance as a means of educating operating officers and others on whom the success of the association's work in a measure depended. This applied particularly to the Air Brake and Fuel Associations' conventions. Now that the roads are returned to private operation there is danger that these opportunities will be overlooked. Evidence of this was seen in the recent convention of the Air Brake Association. While the attendance in itself was good, it showed a marked falling off from that of last year when, at the instigation of the Railroad Administration, there was an unusually large attendance. It is to be hoped that at the coming convention of the International Railway Fuel Association, which opens May 24 at the Hotel Sherman, Chicago, the railroads will not overlook these opportunities. The importance of the work of this association is indicated by the results accomplished by the Fuel Conservation Section of the Railroad Administration, which are well known and need not be reviewed here; it only needs to be pointed out that the groundwork for this accomplishment had long been established by the association. The material reductions in unit coal consumption which were effected during the years 1918 and 1919 were brought about by the most completely concerted effort toward a single end which has probably ever been put forth by railroad organizations as a whole. While there is no longer a central administrative body dealing with fuel conservation matters, there still is the convention of the Fuel Association, the real value of which depends entirely upon the extent to which railway managements avail themselves of the opportunity which it offers. Fuel problems are operating problems; they are mechanical department problems; they are purchasing department problems. Let the managements display the same enlightened liberality in encouraging attendance this year as was displayed last, and the result in keeping up the high standard of fuel performance set last year will be gratifying to the railroads and the nation as well.

**The Trend in Train Loading**

The business of transportation is not simply to move freight, but to move freight expeditiously and cheaply. At least one, and sometimes both of these objectives have frequently been lost sight of in train loading. The welfare of the railroad from a business standpoint has often been overlooked by the mechanical department in an endeavor to lighten the burden on the machinery, and more frequently by the operating department in the determination to arrive at an unusual showing in train loading. It is essential that both departments consider the operation as a whole. Recent discussion of the subject, however, bears evidence of a growing appreciation among operating as well as mechanical men of the importance of the time factor in tonnage rating. The Traveling Engineers' Association has gone on record as advocating an average speed for slow freight trains of 12 miles an hour, the importance of which will be realized when it is understood that the actual speed of slow freight trains has been more nearly 10 miles per hour as determined by the Operating Statistics Section of the Railroad Administration. Tonnage rating with respect to speed is in reality a very simple matter and many excellent studies of this subject are available. Mr. Mounce's article appearing in the *Railway Age* of April 16, page 1191, is in itself a comprehensive review of the entire question. The problem of determining the maximum tonnage that a locomotive will pull between two divisions within a certain time must primarily be an adjusted rating; that is, one which takes into consideration the range in frictional resistance per ton, dependent upon the average weight of each car in the train. The relative importance of this factor diminishes as the grade resistance increases, but there are many practically level divisions on the different railroads today that are now being operated without the slightest consideration for adjusted ratings. If the average speed of a freight train is to be given the consideration it deserves, the profile of the division must be considered with respect to the extent of ruling grade. If it is practically a level division, then obviously the locomotive must be given a train with which it can at any point on the

division maintain a speed considerably in excess of the average, as it may be considered that this train is negotiating a ruling grade over the entire division. The same rule applies if the division represents a continuous or nearly constant ascent in one direction, but if opposing grades cover only a minor portion of the mileage between terminals; then the locomotive may possibly be required to haul a train with which it cannot exceed eight or ten miles per hour on this ruling grade, with the assurance that a very much higher average speed will be made over the entire division. While this is an extremely elementary view of the problem, the application of these principles is so far from universal that the subject is worthy of more general consideration.

## Half Way Measures Will Be Ruinous

THE RAILWAY COMPANIES have asked the Interstate Commerce Commission for advances in rates which it is estimated would yield increases in earnings exceeding $1,000,000,000 annually. The advances sought are somewhat larger than anybody thought would be necessary until a few months ago. But almost all estimates up to a few months ago were based on the operating results of the railways in the year ending October 31, 1919, just before the coal strike.

Statistics are now available showing income and outgo in November to February, inclusive, the last four months of government operation, and in March, the first month after the resumption of private operation. The coal strike ended in December, and January, February and March were months of record-breaking freight and passenger business. But in these months, as well as during November and December, while the railways made large increases in their earnings, they made much larger increases in their expenses. The result was that net operating income was relatively much the smallest it had been since the advances in rates made by the Railroad Administration in June, 1918. The figures for these months indicate that on the basis of present rates and expenses the roads could not realize more than $200,000,000 net operating income in a year, whereas over $1,200,000,000 is required to pay 6 per cent on their aggregate book cost of road and equipment.

The advances in rates asked are enormous. Nor are they all that may be sought in the near future. The railway employees are petitioning the Railroad Labor Board to increase their wages another $1,000,000,000 a year. The railway companies unquestionably will add to the advances in rates for which they are now petitioning one dollar for every dollar which the award of the Railroad Labor Board may add to their present payroll.

The Interstate Commerce Commission doubtless feels that it will assume a heavy responsibility if it authorizes such large advances in rates as are being asked for. But for the commission to grant advances which will be practically certain to make the net operating income of the roads on their book cost *at least* 6 per cent is the only way in which the solution of the railroad problem can be advanced without further legislation. Probably it is the only way that the solution of the railroad problem under public regulation and private ownership can be made possible. Among the reasons why this is the case are the following:

First: Regardless of whether the book costs of individual roads or the roads as a whole represent approximately the investment in them or their value, we have the advantage of knowing what the percentages of return earned on the book cost in the past have been and the effects on railroad development produced by the earning of these various percentages. We know that when the percentage earned on book cost dropped below 5½ per cent the annual investment in the railroads began rapidly to decline, and that when it dropped below 5 per cent railroad expansion practically came to a stop.

Second: It is well known that the average percentage of return the railways must now pay to raise new capital is very much higher than it was when they were earning a return on their book cost equal to or exceeding 5½ per cent and raising substantial amounts of new capital. It necessarily follows that they would be unable to raise substantial amounts of new capital now or in the near future if they were restricted to the earning of any amount of net operating income which would not be equivalent to at least 6 per cent on their book cost. But it is absolutely essential to the prevention of a great national disaster that the railways should be enabled to raise vast amounts of new capital in the near future with which to expand their facilities and make it possible for them to handle more traffic.

Third: Government regulation and private management are once more on trial. They are on trial this time for their lives. If the commission allows the railways to earn the very maximum permitted under the Transportation Act there probably will be complaints regarding the amount of the advances in rates, but at the same time the railway companies may thereby be enabled within a few years to make sufficient additions to their facilities and improvements in their service to save the country from disaster and to give reasonable satisfaction to the public. In that event government regulation and private management may be voted a success by the public and continued. Suppose, however, the commission tries so hard to avoid letting the railways earn too much that it prevents them from earning an average of 6 per cent. Most of the public will assume that the commission has done all for the railways that should be done. If the railways fail adequately to increase their facilities and improve their service—as they undoubtedly will—a large part of the public, instead of attributing this to the insufficiency of the rates granted by the commission, will attribute it to the shortsightedness or incompetency of the railroad managements. We shall then go through a long period of increasingly inadequate transportation service, resulting in exasperating and costly congestions and delays and growing agitation against private management. This period would be bad enough for everybody; and the ultimate outcome probably would be still worse, for that ultimate outcome probably would be the adoption of government ownership and operation or of the Plumb plan.

Enormous as will be the advance in rates that will be necessary to enable the railways to earn a net operating income equivalent to 6 per cent on their book cost, there is no possible escape from the conclusion that they must be allowed to earn this much in order to give private management a good chance to succeed. Private management may fail if the railways are allowed to earn this much; it is at this time impossible to conceive how it can help failing if they are not allowed to earn this much.

The commission is likely to hesitate to make as large advances in rates as the railway companies have suggested for fear this will enable them to earn more than 6 per cent. But the incurring of any deficiency as compared with 6 per cent will retard the development of the railways, while the earning of any excess over that amount will tend to stimulate development, and, of course, one-half of anything over 6 per cent earned by any individual road will be owned by the government. In the circumstances, it would seem that it would be much safer, from the standpoint of the national welfare, for the commission to take the chance of making the return earned by the companies a little larger than to make it a little smaller than is contemplated by the Transportation Act.

One point is very clear. This is that if the commission is to help in solving the railroad problem it must for the present use its lawful powers to the limit to help the railway com-

panies. The adoption of half-way measures in the present emergency would not only do absolutely no good, but would be ruinous.

## Getting Full Value from the June Conventions

THE COST of holding the mechanical department conventions at Atlantic City in June, and of providing for the record-breaking exhibit which will cover almost 100,000 square feet of space, will run into hundreds of thousands, possibly a million dollars. Part of this will be in the nature of a direct outlay on the part of the railroads in preparing the convention reports and paying the expenses of the delegates; in the last analysis, however, the cost of the exhibit will be paid for indirectly by the roads.

All of the activities of the railroads must be conducted on a strictly business basis and incidentally it is important that the greatest possible returns be secured from the investment in this and other railway conventions. How is this to be done? Last year, when the roads were under the Railroad Administration, orders were issued that every mechanical department officer possible should attend the conventions; more than this, the men were asked to report on those things which they heard or saw at the conventions which in their opinion could be used to advantage on their individual roads. The head of the mechanical department of each road was asked to summarize the reports of his subordinates and send a copy of it to Washington. The sole idea in making this request was to encourage the delegates to get the greatest possible concrete returns from the convention; it was not intended as a check upon the activities of mechanical department officers, although unfortunately its intention was construed in this way by some of them. The fact that greater concrete results will be obtained from the convention where the delegates are instructed to report back their findings, than if they go uninstructed, cannot be gainsaid. It is important in any field of endeavor that men have constantly before them a definite objective.

There was not only misunderstanding last year as to the exact purpose of the reports, but comparatively few of those making the reports had a real conception of what was wanted. For instance, a story of the visit to Atlantic City with comments on the high points in the various reports which were presented and a listing of the more important exhibits was not what was desired; nor was it necessary that the report should be lengthy or formal. What was really desired was a report, brief and very much to the point, on those things which were learned either from the reports or discussions in the convention hall, in conversation with other railroad officers, or in visiting the exhibits, which would help to solve some concrete problem on the individual road and which the observer believed should be drawn to the attention of the head of his department.

One of the very best reports was made by two of the younger men on the mechanical staff of one of the more important railroads. One of these men recommended for trial or investigation on his particular road six different devices which he believed could be applied to certain classes of equipment to very good advantage. In each instance about fifty or sixty words were used to tell why, in the opinion of the observer, the device was necessary, what it would cost, what its limitations were, and where it should be used. The report of his associate was somewhat broader and possibly not quite so definite. It called attention to certain things in the reports and discussion which were of prime importance to the railroad in question and also recommended the trying out of certain devices which were noticed in the exhibit or had been drawn to the attention of the observer while at Atlantic City. Both of these reports were so good that the head of the mechanical department refrained from making a definite report himself but forwarded the findings of his subordinates.

One or two excellent reports were made by individuals who had been definitely assigned to investigate certain questions. One chief clerk, for instance, reported the result of a number of interviews with different mechanical department officers on the interpretation of certain rules which had been made effective shortly before the convention and which were not clearly understood on his road.

Where a number of men attend the convention from the same road, special assignments could well be made to each of them so that all phases of the convention activities and exhibits will be covered without too much duplication of effort. It would then be profitable to hold a staff meeting of these men upon their return home in order to secure a consensus of opinion on the part of all of them as to the recommendations of the various individuals.

In a number of cases, however, the heads of the mechanical departments have preferred to take their men with them in a group in visiting the exhibits in order that they might be in continual conference and thus benefit from the questions or suggestions of the different men in examining the exhibits.

Whatever course is followed, it is earnestly to be hoped that every railroad will plan in advance and carefully study how to get the greatest possible concrete returns from the coming conventions.

## Priority of Capital and Materials for Essential Industries

DURING THE WAR it was recognized as a national necessity that discrimination should be practiced between "essential" and "non-essential" industries in the furnishing of capital, materials, fuel and transportation. An essential industry, in the sense in which the words were then used, was one whose operation to maximum capacity was required in order that the war might be carried to a successful conclusion. The government, in order to insure that industries of this class would be able to operate to their capacity, established systems of priority by which they were given precedence in securing materials, capital, fuel and transportation.

It was assumed that after the war ended there would be no further need for systems of priority. The progress of events is showing that that assumption was incorrect. Doubtless it would be undesirable to re-establish priority in industry by government intervention; but conditions have developed which demonstrate the need for the private managements of certain classes of business concerns to establish systems of priority which will favor essential industries. If the managers of private businesses show they have not enough judgment, courage and foresight to adopt the measures necessary to put American industry and finance on a sound basis, they will help to justify demands which may be made for a renewal of government intervention.

Industries can correctly be classed as essential and non-essential in peace as well as in war. It is impossible precisely to draw the line between them, but it is possible to say as to most industries whether they are essential or non-essential. An essential industry is one which produces food, clothing, fuel or housing for the people or whose operation is necessary for the production of some or all of these things. A non-essential industry is one which produces articles of luxury which it is desirable people should have, if they are already provided with necessaries, but without which they could maintain an existence and even live comfortably.

Agriculture is plainly an essential industry. Coal min-

ing is another. Railroad transportation is another. Without railroad transportation it would be impossible in a country such as the United States to produce or to distribute the things without which the people could not live. The manufacture of passenger automobiles, of pianos, or of silk shirts is not essential. People would not freeze or starve, or go naked or unsheltered without these things.

Developments have demonstrated that because of the war there are not now available enough materials and capital to supply all the demands of both the essential and the non-essential industries of the United States. Recently the live stock producers of the Southwest adopted resolutions addressed to the Federal Reserve Bank of Kansas City, calling attention to the fact that the farmers in that territory were being denied credit at the banks which they required in order to carry on the operation of their farms, while vast amounts of capital were being absorbed in non-essential industries. The railways might reasonably memorialize the banks and producers of materials upon the same subject.

The railways need vast amounts of new capital to provide facilities with which to transport the country's commerce. They are unable, with their present facilities, to haul the agricultural products, the coal and the lumber which are imperatively needed to provide the people with food and housing, to keep them warm and enable their other essential industries to operate. But railways with the very best records for earning and paying interest and substantial dividends are finding it extremely difficult to raise new capital and are having to pay exorbitant rates for it. Railways with less credit are finding it almost impossible to raise capital at all. Meantime billions of new capital are being absorbed by automobile companies, moving picture companies, wild cat oil companies and so on.

The railways need vast amounts of equipment and materials with which to rehabilitate their properties and enlarge their capacity. They, and the railway equipment and supply companies, which build cars and locomotives and fabricate materials for the roads, are finding it impossible to get sufficient materials. Recently one of the largest freight car manufacturing concerns in the United States had to close down when it had large orders for freight cars on its books because it could not get materials with which to build them.

The two principal things regarding which priority should be established are capital and materials. The banks can establish a system of priority with respect to capital that will be very helpful by sharply curtailing loans to non-essential industries and loaning relatively larger amounts to the farmers, the railway companies and other persons and concerns engaged in essential industries. The manufacturers can establish a system of priority with respect to materials by giving preference in supplying them to the railways and other essential industries.

It may seem to the financiers and the manufacturers of materials that if they do this they will suffer losses because many of the non-essential industries can pay higher rates for capital and higher prices for materials than can the railways and some other essential industries. But what is going to happen to the entire industrial and financial structure of the country if those who are able do not help the railways to get capital and materials? The railways will become more and more unable to handle the country's commerce, and the less essential industries which now offer higher prices for capital and materials will themselves become unable to increase their production because the railways will be unable to give them adequate transportation. If these less essential industries continue to increase their investments without being able to increase their production they will be unable to earn a return upon their increased capital. Becoming unable to earn a return upon their increased capital, they will get into financial difficulties and the result may be that the entire industrial and financial structure of the country will come down.

The *Railway Age* began to point out months ago the menace not merely to the development but to the solvency of the industries of the United States which was presented by the fact that large amounts of capital were being invested in other industries to expand them while practically no capital was being invested in the railways to expand them. The conditions to which we have repeatedly referred have been greatly aggravated by the fact that for months other industries have been buying the kind of materials the railways need while the railway companies themselves, owing to the delay in returning the roads to private operation, have been unable to enter the market for materials. Now the railways that are able to buy materials cannot get them. There are many more people who today realize the nature and seriousness of the situation which has been developing than there were some months ago, but unfortunately there are comparatively few even now. The sanity and foresight of the business men of America, and especially of its financiers and manufacturers of materials, are now confronted with one of the most critical tests to which they ever were subjected. Upon the way their sanity and foresight stand that test will depend future developments of vast importance.

In this connection, it may be well to refer to the fact that the new Transportation Act gives the Interstate Commerce Commission a kind of authority which possibly might be beneficially exercised under present conditions. The act authorizes the commission whenever it "is of the opinion that shortage of equipment, congestion of traffic or other emergency requiring immediate action exists in any section of the country," "to give directions for preference or priority in transportation, embargoes, or in movement of traffic under permits, at such time and for such periods as it may determine, and to modify, change or annul them." It is not inconceivable that the transportation situation may become such, or is such now, as to justify the commission in establishing a system of priority and permits in the handling of traffic, and if this should be the case, will the commission not be justified in using its authority to give priority to commodities produced by or intended for essential industries?

## Lehigh Valley

THE LEHIGH VALLEY is a double-track line between Buffalo and New York, doing, besides its trunk line business, a large anthracite coal business. It is keenly competitive with the Lackawanna, the New York Central, the Erie and to a lesser extent with the Pennsylvania and the Baltimore & Ohio. The average mileage operated is 1,436, and of the total of 30,935,000 tons of freight carried in 1919, 42.74 per cent was furnished by anthracite coal and 10.23 per cent by bituminous coal and coke. Since competitive considerations were largely disregarded in 1919 and 1918, the financial showing of the property under government operation is not indicative of the real earning power under present conditions; neither is the showing made in operating statistics. Artificial conditions of operation were imposed on all roads and on the eastern trunk lines probably to a greater extent than on the lines west of the Mississippi.

It is well to bear this fact in mind in studying the 1919 annual report, because otherwise the condition of the property, and more especially its prospects of earning a dividend for its stockholders, would appear unduly bad. In 1919 total operating revenues amounted to $65,543,000, a decrease as compared with 1918 of $1,246,000. In 1917 the property earned $53,358,000. Rates, of course, were much higher in 1919, so that the business done in 1919 was actually considerably less than in 1917. Thus the total tons of all freight carried one mile in 1919 was 5,968,000,000—a decrease as compared with 1918 of 1,169,000,000, and with 6,663,000,000 ton miles carried in 1917. Even passenger business, which should have shown a great increase over

1917, amounted to 262,693,000 passengers carried one mile in 1919 as against 243,924,000 passengers carried one mile in 1917.

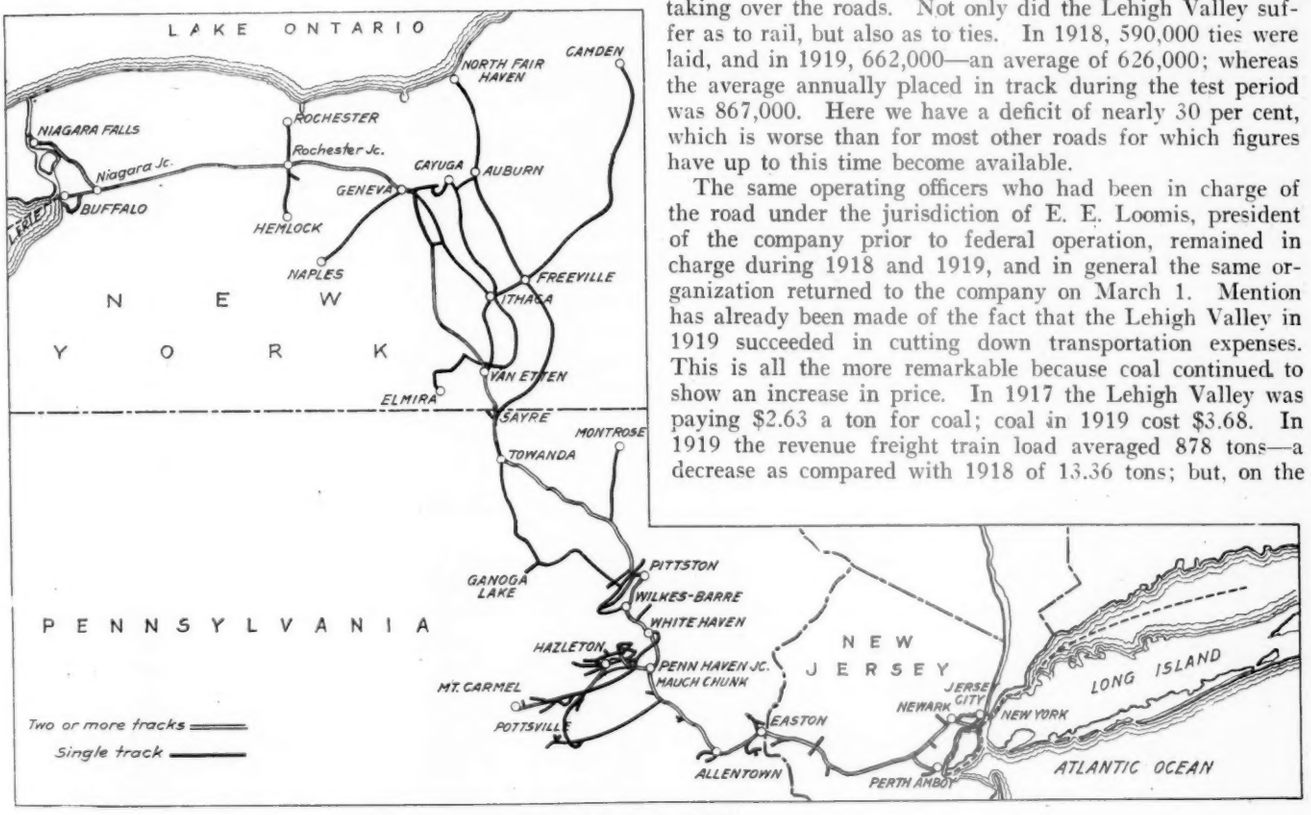
Before the government took over the road, the company was paying 10 per cent dividends and earning a margin of $1,000,000 to $2,000,000 surplus above dividend requirements. Under the government rental the company continued to receive a net income based on the three years prior to 1917, but reduced its dividend payments, beginning with the quarterly dividend paid July 5, 1919, to 7 per cent, although this fact is adduced only from a study of the profit and loss account, and is not mentioned specifically in the annual report. This rate of dividends would call for approximately $4,100,000. Actually the net income of the company, after paying interest charges and taking into its accounts dividends received from other companies, etc., was $4,977,000 in 1919 and $6,593,000 in 1918. Had the company, however, been operating on its own property in 1919, it would have had but $3,779,000, to which would have been added $1,848,000 from other corporate income, and against which there would have been charged $8,187,000, leaving, instead of any surplus for dividends, a very considerable deficit after paying interest.

The Lehigh Valley has now 16,942 stockholders, and the average holdings of stock are 71.54 shares per stockholder. Over one-third of the stockholders are women, the total number being 6,139.

In 1919, even when a road had a falling off in freight business, it generally proved difficult to hold transportation expenses (the out-of-pocket cost of doing business) down to the high levels of 1918; for one reason because additional wage increases were made by the government effective during all of 1919 and not during all of 1918. The Lehigh Valley, however, spent only $28,871,000 on transportation in 1919 as against $30,010,000 in 1918—a decrease of $1,139,000. In 1919 transportation expenses consumed 44 per cent of operating revenues; in 1918, 45 per cent.

On the other hand, maintenance expenses showed considerable increases in 1919 over 1918. Thus maintenance of way cost $9,825,000 last year as against $7,820,000 the year before, and maintenance of equipment cost $18,153,000 last year as against $17,035,000 in 1918. It is evident from the report that there is considerable deferred maintenance. Most roads in the country have deferred maintenance as regards new rail. The Lehigh Valley laid only 13,626 tons in 1918 and 15,082 tons in 1919, an average of 14,354 tons, which compares with an average of 20,092 tons laid annually during the three-year test period on which the rental is based. A deficit of 25 per cent in rail renewal hardly seems to carry out the letter of the contract with the government, much less the spirit of the President's proclamation taking over the roads. Not only did the Lehigh Valley suffer as to rail, but also as to ties. In 1918, 590,000 ties were laid, and in 1919, 662,000—an average of 626,000; whereas the average annually placed in track during the test period was 867,000. Here we have a deficit of nearly 30 per cent, which is worse than for most other roads for which figures have up to this time become available.

The same operating officers who had been in charge of the road under the jurisdiction of E. E. Loomis, president of the company prior to federal operation, remained in charge during 1918 and 1919, and in general the same organization returned to the company on March 1. Mention has already been made of the fact that the Lehigh Valley in 1919 succeeded in cutting down transportation expenses. This is all the more remarkable because coal continued to show an increase in price. In 1917 the Lehigh Valley was paying $2.63 a ton for coal; coal in 1919 cost $3.68. In 1919 the revenue freight train load averaged 878 tons—a decrease as compared with 1918 of 13.36 tons; but, on the other hand, the tons of all freight handled averaged 727 per revenue service locomotive mile as against 705 tons in 1918.




The Lehigh Valley

The following table gives the principal figures for operation in 1919 compared with 1918. This is not the corporation income account:

| | 1919 | 1918 |
|---|---|---|
| Average mileage operated | 1,436 | 1,441 |
| Anthracite coal freight revenue | $20,740,000 | $21,225,000 |
| Bituminous coal freight revenue | 2,335,000 | 2,893,000 |
| Merchandise freight revenue | 28,532,000 | 29,156,000 |
| Total operating revenues | 65,543,000 | 66,789,000 |
| Maintenance of way and structures | 9,825,000 | 7,820,000 |
| Maintenance of equipment | 18,153,000 | 17,035,000 |
| Transportation expenses (rail)u | 28,871,000 | 30,010,000 |
| Traffic expenses | 481,000 | 655,000 |
| General expenses | 1,293,000 | 1,193,000 |
| Total operating expenses | 60,089,000 | 57,927,000 |
| Texas | 1,825,000 | 1,876,000 |
| Operating income | 3,629,000 | 6,986,000 |
| Net federal income | 3,779,000 | 6,763,000 |

Corporate Income Account

| | 1919 | 1918 |
|---|---|---|
| Rental | $11,316,000 | $11,321,000 |
| Other corporate income | 1,848,000 | 3,026,000 |
| Gross income | 13,164,000 | 14,438,000 |
| Interest, war taxes, etc | 8,187,000 | 7,755,000 |
| Net corporate income | 4,977,000 | 6,593,000 |
| Dividends | 4,700,000 | 6,061,000 |
| Surplus | 277,000 | 532,000 |

# Letters to the Editor

## Flagging and Its Relation to Railroad Accidents

To the Editor:

The article on the above subject by Interstate Commerce Commissioner C. C. McChord, which appeared in the *Railway Age* of June 20 last, has been read many times by the writer, and each time some kind of excuse in connection with Rule 99 occurs to me. The commissioner says the fact that train movements are protected by automatic block signals does not alter the requirements for the flagging rule. Everybody knows this; and just so long as railroad officers wink at loose observance of Rule 99, there will be disastrous collisions. Some officials try to protect trains while doing station work, or taking meals, by train order, thus placing the burden of possible collision on the train despatcher, who is miles away. This is not fair. The following incident happened some time ago. We were breaking in a despatcher who had been promoted from an operator on the road and after he proved himself confident to take charge of the job, he was placed on third trick. One of the mixed runs which the despatcher is supposed to protect at the rear starts at J, which we will call its initial terminal. On the morning in question there was an extra train to operate in the same direction as the mixed train, for the purpose of picking up ties. The extra engine was given a running order from J west to O where it was to turn back and load ties eastward. The conductor expected to leave J about 6:30 a. m. or the same time as the mixed run was due out. After fixing the extra west the despatcher put out the protecting order to the mixed run in words like this: "All extra west wait at J until ten-thirty, 10:30 a. m.," and cleared the mixed run on it. He had received from the operator at J a report that the extra west had left there at 6:30 a. m. In taking the transfer at 7 o'clock my attention centered on the extra west out of J, because very few extras were being run in that territory at that time. I then looked in the order book and saw the protecting order for the mixed run and asked the despatcher whom I was relieving if he expected the tie train extra in the order and he said he did not. I said to him: "Suppose the extra west should go in the siding at K (which was the next station west and without an operator), and then follow the mixed one out?"

The boy will never be any whiter when he is dead than he turned at that particular moment and he said, "I did not think of that." Just as soon as I could raise the operator at the next station I caught the mixed run and took up the order. It happened, though, that the extra kept ahead of the mixed run to the next telegraph office. However, the mixed run might have passed the extra at any point and, without giving the matter any thought, rely on the protecting order for protection, when as a matter of fact, the extra could have overtaken him and found him unprotected. Of course, the argument would be put up that it was the despatcher's fault; we will agree; but this is an example of just how an accident may happen when there is no reason to have such a condition exist.

I was working a trick a long time ago in Sedalia, Mo., and one evening the superintendent happened to come into the office and sit down for a short while. During this time I fixed up an extra to go out on the Lexington Branch and return with a train of coal. After the extra had been cleared the conductor asked the operator to ask me if there would be anything following him. There was not much traffic on this branch at night; in fact, this was the only train I could see for the entire night; and I told him "no." The superintendent immediately told me I was working out of my jurisdiction when I did anything like that; that I could not tell at what minute it would be necessary to run something else out there and that the conductor was supposed to protect his own train and for me to tell him so. And I did.

When men in the train service on a railroad are not taught and made to flag as per Rule 99 at all times and under all circumstances collisions will continue to pile up regardless of all fixed signals that may be put in use. J. L. Coss.

## "Postage Due" Expensive in Foreign Countries

Peking, China.

To the Editor:

For the sake of your advertisers run this: "See that your mail clerks put five cents postage on all letter mail to China."

For insufficient postage there is a penalty of 12 cents Mex. in China and 12 cents Mex. means about 15 cents U. S. A. at present rates of exchange. Shanghai has an American postoffice, hence domestic rates apply. But outside of Shanghai foreign rates apply. The enterprise of American advertisers is making itself felt. Every mail contains quantities of stereotyped "personal" letters setting forth the reasons why the Chinese prospect should part with his money for the American device. The prospect cannot buy them all, and then the merciless "follow up system" begins to hammer on him, each letter costing the recipient 12 cents Mex. Imagine the popularity of that American device about the time the fourth instalment of the "follow up" series arrives!

Chinese Correspondent.

## Some Reasons for Car Shortage

New Bedford, Mass.

To the Editor:

We noticed a clipping recently from your paper with reference to the shortage of railroad equipment, and the necessity for the full loading of cars.

There is an abuse from which the purchasers of lumber have suffered, and which entails unnecessary car equipment on the part of the railroads, which is caused by the reprehensible practice of some lumber shippers in loading cars with small loads, even under the minimum, because of the fact that the purchases were made long ago and the lumber has advanced greatly in the meantime. We ourselves have three such cases, and we presume thousands of other retailers have suffered in the same way. Our shipments have been delayed from all sorts of excuses, and finally if they were made at all the quantity was cut down and we were without redress, simply because the shippers were not compelled to load a car to its full capacity. We have a car which arrived this morning which has a capacity of 60,000 lb., and it has less than 11,000 ft. of spruce lumber on it, which on a basis of 3,500 lb. to 1,000 ft. of lumber would show an underloading of at least 20,000 lb.

The "transit car" evil is another thing that contributes not only to the car shortage but to the high cost of lumber. The cupidity of the seller is given a wide range of possibility, as any buyer well knows that he cannot place an order for a transit car unless it is first submitted to the office, and that means in many cases that the highest offer gets the lumber. We have a great many such lists every week. Now if shippers were only allowed to load bona fide orders, lumber purchased long ago at low prices would be in the hands of the retailer instead of this high priced stuff. I have written various letters to our representatives at Washington, but they do not seem to get any action. We think that if all retailers would take hold and do their part there might be some relief. C. G. Ferguson, Treasurer.

Central Lumber & Supply Co.

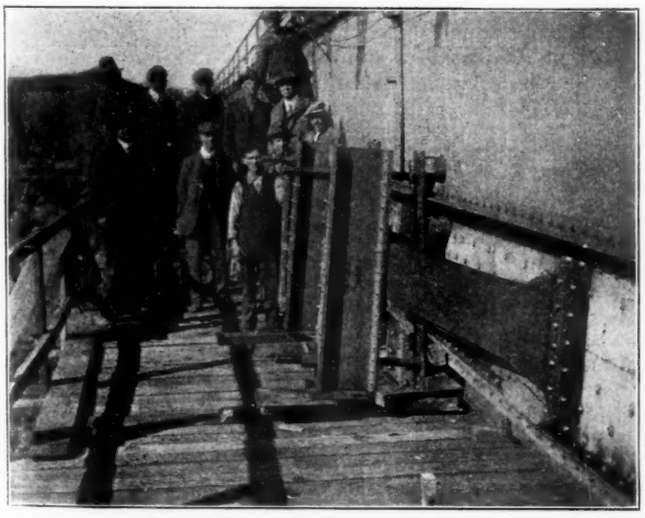
# Extending the Life of the Niagara Gorge Arch

## Scientific Adjustment of This Railway Structure Greatly Increases Its Loading Capacity

*The Arch and Gorge from the American Side*

AS A RESULT of a thorough overhauling, the arch carrying the Grand Trunk over the Niagara gorge has been strengthened to carry loads 62 per cent greater than those for which it was designed 22 years ago. This has been accomplished with the addition of only 600 tons of new metal, no portion of which was used to strengthen the main members of the arch structure, and the total expenditure involved is less than one-quarter of that which would have been required for the construction of a new bridge. Credit for this remarkable result must be given to both the past and present generations of bridge engineers,—to the past for their conservatism in the use of low unit stresses to compensate for factors of uncertainty in a structure of indeterminate stresses and to the present for the advance in the science of bridge engineering whereby it has been possible to utilize the elements of latent capacity in old structures, through an ability to determine actual stresses under various conditions of load.

Aside from the field of opportunity for the conservation of other important railway structures which it suggests, an account of the work done on the Niagara arch is of interest because it is one of the best known bridges in America,



**The Compression Toggle Used to Open Up the Crown Joint in the Top Chord**

having been built in 1897 as the third structure to span the Niagara river gorge at the same site. The first bridge, a light suspension span for pedestrian traffic, was built in 1848. This was replaced in 1855 by the famous suspension bridge constructed by John A. Roebling, which performed useful service for 43 years, although requiring general reconstruction between 1877 and 1880.

The present structure is a two-truss, two-hinged, spandrel-braced arch of 500 ft. span, flanked on either end by a 115-ft. pin-connected truss span and short lengths of steel viaduct. The structure carries two railway tracks on an upper deck and a highway on a lower deck with sidewalks cantilevered on either side. The railway deck carries train and switching movements of the Grand Trunk, the Wabash, the New York Central, the Erie and the Lehigh Valley, aggregating some 70 or 80 trains a day.

The improvement of this bridge recently completed came about as a result of an investigation made by Charles E. Fowler, consulting engineer, New York City, in 1918, at the instance of the Niagara Suspension Bridge Company, owner of this bridge, whose officers realized that it was being subjected to train loads much in excess of those for which it was designed (about E37). Not only was it desired to ascertain the capacity of the structure for the loads it was carrying, but it was also important to consider possible increases in train loadings in the future as influencing the ultimate life of the bridge.

The study made by Mr. Fowler consisted very largely of strain-gage measurements to ascertain stresses in the members of the structure under various loadings, a large part of which consisted of test trains run over the bridge under different speeds, arrangements and loads. This investigation not only disclosed the direct stresses, but the data taken were sufficiently complete to give a good idea of the secondary stresses and impact. Studies were also made to determine what loadings the bridge should be capable of carrying if it were to continue in service for any considerable period. This led to a conclusion that a loading of E-60 for the main trusses and E-70 for the floor would be adequate for many years to come.

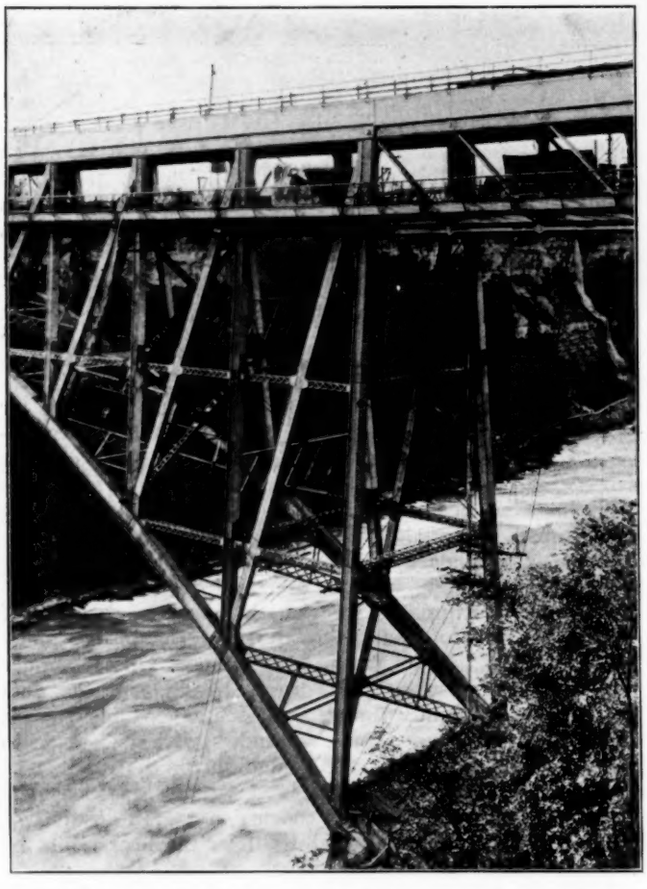
Following this, the work of strengthening was undertaken. The new steel introduced was applied primarily in increasing the strength of the floor system, in strengthening certain members of the approach spans and the viaducts, and in providing a new system of transverse bracing in the arch. However, the crowning feature of this entire project comprised the adjustment of the arch trusses so as to relieve certain conditions of over-stress in main members and thereby obtain a structure that is entirely adequate for present day loadings.

### How the Arch Was Adjusted

The main span of the bridge was designed and built to act as a two-hinged arch for both dead and live loads. In other words, both top and bottom chords are under stress

at the crown for all usual conditions of loading. Owing to unavoidable inaccuracies in erection, this condition was not obtained when the two halves of the structure (which were erected by the cantilever method) were brought together at the crown. Instead the top chords failed to come in contact by one-quarter inch. To overcome this defect, L. L. Buck, the designer and builder of the arch, arranged to jack the top chords apart at the crown by means of a special toggle arrangement and introduce shims one inch thick between the abutting ends. Another important feature in this connection was a precaution taken in the design, owing to Mr. Buck's feeling of uncertainty as to the actual behavior of the bridge, to proportion the lower or main chords of the arch for stresses that were a mean between those of the two-hinged and the three-hinged conditions. Therefore, the lower chords as built were considerably heavier than necessary for the stiffer two-hinged construction.

These two circumstances relating to the design and erection of the bridge afforded the element of reserve strength which has been utilized in the recent readjustment. Furthermore, the fact that provision had been made for jacking



**American End of the Arch Showing Old Cross Bracing Still in Place in the End Bent and the New Bracing in the Other Bents**

apart the top chords at the crown proved of value for the present purpose as will be shown hereafter.

Strain gage measurements on a completed structure under dead load are normally of value only in ascertaining the increase or decrease in stress taking place as train loadings are applied or removed from the structure. They disclose nothing as to the stresses already existing in the span as a consequence of its own weight. This is a matter of fundamental importance in an arch such as this because of the unreliability of an analytical determination of the stresses in a case where so much depends on the conditions obtaining in the erection. If, on the other hand, it is possible in any way to determine the actual dead load stress in one of the main members of the arch, this would enable computations to be completed that would disclose stresses in all the other members. This was accomplished in the Niagara arch by jacking the abutting ends of the top chords apart at the crown so that the crown panels of the top chord would be relieved of all stress. The resultant increase in their length as recorded by strain gages showed that the top chords had been relieved of a compressive stress of 689,000 lb.

Previous to this operation, various analyses had been made

**The New Floor Under Construction—Floor Plates in the Foreground**

of the arch stresses under dead load on the assumption of different conditions of compression in this center panel of the top chord, from total stresses varying from 200,000 lb. to 1,200,000 lb. and after a careful review of the stresses in the several members of the structure under these various assumptions, it was concluded that a dead load compressive stress of 300,000 lb. in the top chords at the crown would give the most favorable conditions of stress throughout all the members of the trusses. This is about half the stress actually found to exist with the one-inch crown shims in place. Consequently, by reducing the thickness of these shims to 5/8 in., the stress in the top chord at the crown was reduced to the amount that would give the most favorable conditions throughout. Some irregularities in stress were noted immediately after this operation was performed, but after the structure had been permitted some time in which to adjust itself under traffic, it was found that the stresses were within six per cent of those desired.

This was the critical feature of the entire project. With this adjustment of the dead load stresses, it was possible to load the bridge with an equivalent of E-60, with allowances for impact as obtained by the old A. R. E. A. or Pencoyd formula and certain percentages for secondary stresses, and obtain unit stresses not exceeding 20,000 lb. in tension and 19,000 lb. (less a slenderness factor) for compression. Records of tests show that the bridge had been built of steel having a yield point of 30,000 lb. per sq. in.

Another factor of advantage in making this adjustment is to be found in the fact that low rivet values were used in the original design, namely, 6,500 lb. for shear. Investigations of the various joints on the basis of the increased loading showed that the rivets were not stressed in excess of 10,000 to 11,000 lb. per sq. in.

The 115-ft. approach spans were also found to possess an excess of strength in the top chords on account of the extra section required when they acted as backstays for cantilever erection of the arch. The main diagonals and bottom chords were also found adequate because of the low unit stresses used in the design of these eye-bar members. The counters and the vertical web members, however, were found to need reinforcement. In the case of the counters this was accomplished by supplementing them with U-bars over the pins adjusted by turn-buckle connections. The posts were strengthened by the addition of a pair of angles and a plate (or a pair of angles alone) on the outside and inside faces, together with additional material in the arch brackets under the floor beams. To make this additional metal thoroughly effective, measures were taken to unload each of these posts with a toggle arrangement while the new angles were being riveted in place, so that when the toggles were again released the additional metal took its full proportion of the dead load stress.

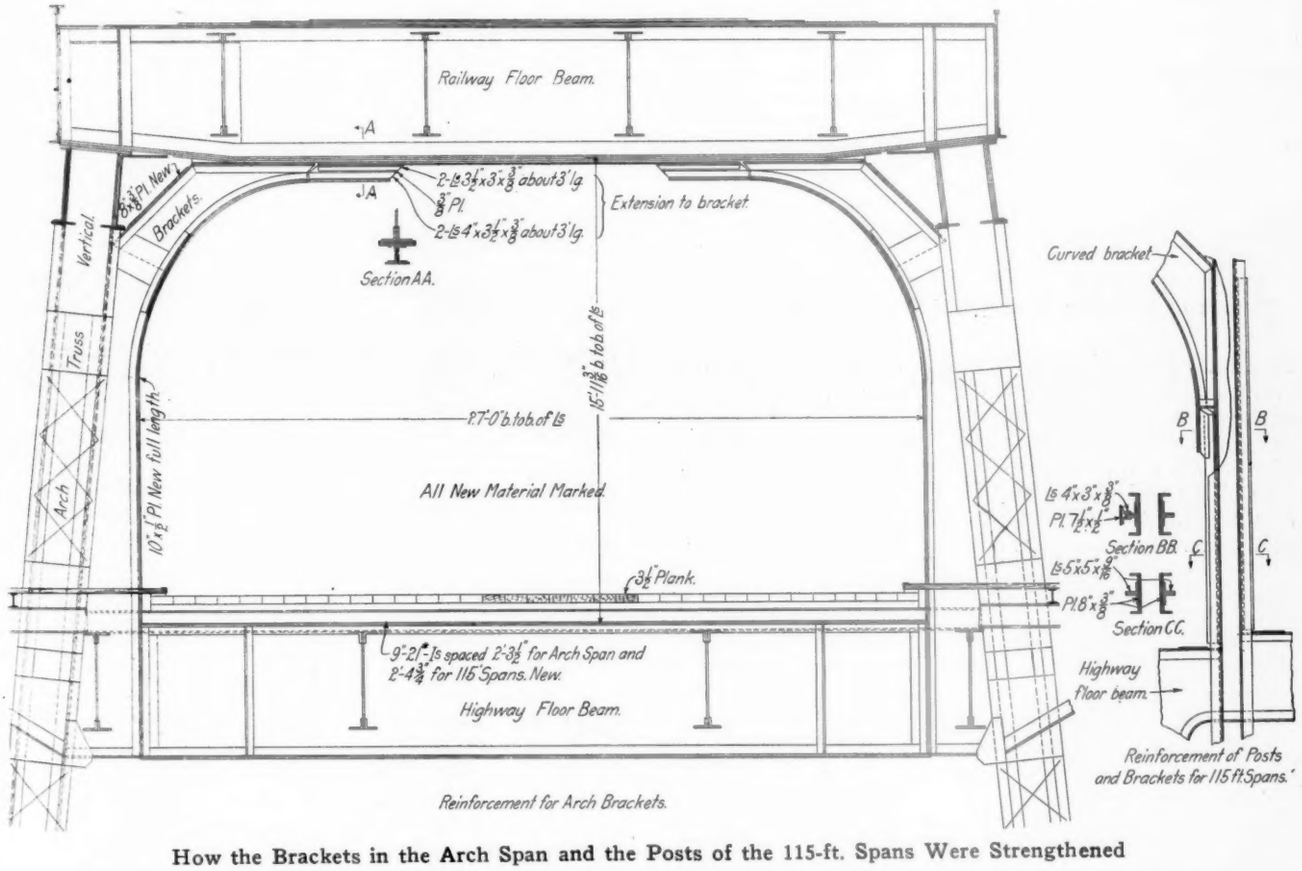
Another matter closely related to the safety of the main arch structure under the heavier loadings, which was disclosed by the investigation in 1918, was the obvious weakness of the transverse bracing, indicated by excessive vibration of the structure under traffic. Some measure of correction of this feature was obtained by tuning up the cross-bracing, which consisted entirely of round rods, by adjusting them with the aid of the strain gage to a uniform stress of 7,000 lb. per sq. in. throughout but when the bridge was overhauled during the past year the project included provision for new rigid bracing. The five bents of web verticals from each end of the arch were equipped either with stiff cross-bracing or with lattice trusses 10 ft. deep, while two of the main diagonals were fitted with new horizontal struts and cross-bracing composed of the rods taken from the vertical sway bracing. The inspection also showed that a large number of the rivets were loose and as a result 11,000 rivets in various parts of the structure were replaced by new ones.

## The Floor System

In remodeling the bridge to increase its loading capacity, the most radical change was made in the floor system which naturally was affected more directly by the increased live loading than any other part. Moreover, it comprised the only portion of the structure that had suffered any appreciable depreciation. The top flange plates of the floor beams and stringers had been reduced approximately one-third by corrosion, largely the result of brine drippings, but even in the floors considerable reserve capacity was discovered in the case of the floor beams of the arch and this also was verified through the strain gage investigation.

As seen in the cross section of the bridge, the railway and highway floor beams together with the two web verticals of the arch trusses and the deep brackets connecting the posts to the railway floor beams form a stiff rectangular frame affording a considerable excess of load-carrying capacity in the railway floor beams over that which would be obtained by calculating the strength of the floor beams as a simple beam between supports. While it was found that the floor beams were somewhat inadequate for E-70 loading, studies made indicated that this could best be corrected by strengthening the brackets and extending them further along the floor beams than by adding additional cover plates to the beams themselves. It was, however, necessary to add a full length cover plate to the top of the floor beams to replace the metal lost on account of corrosion.

The stringers on the arch and the 115-ft. approach spans were strengthened by the addition of top and bottom cover plates except on the American approach span and six panels at the American end of the arch where a raise of grade was introduced. Here the top flanges were strengthened by the

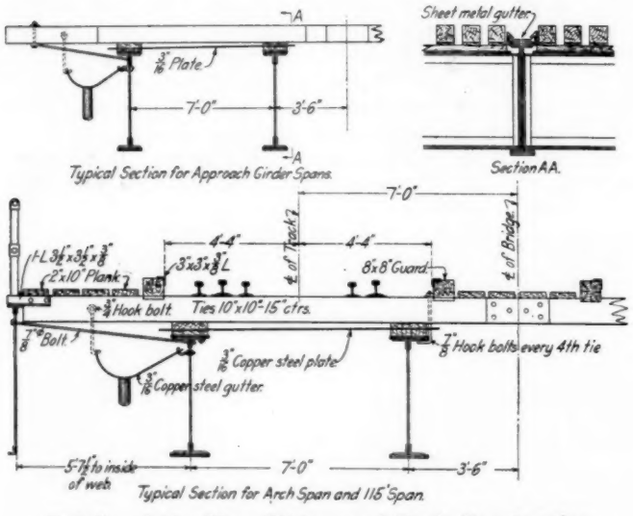



**How the Brackets in the Arch Span and the Posts of the 115-ft. Spans Were Strengthened**

use of a superimposed I-section that served also to raise the grade. About 65,000 rivets were cut out and redriven in the course of the work on the floor system.

### Special Waterproof Deck Construction

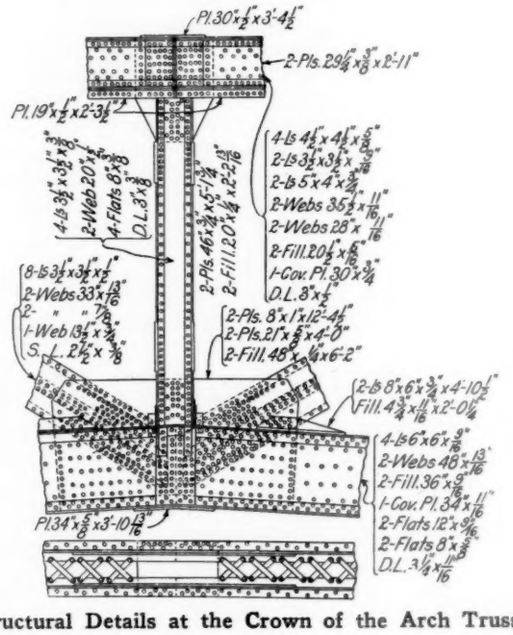
Another important change made in the floor system consisted in provision for a new waterproof deck, designed to protect the steel work as well as the users of the highway against drippings from the track deck and passing trains.



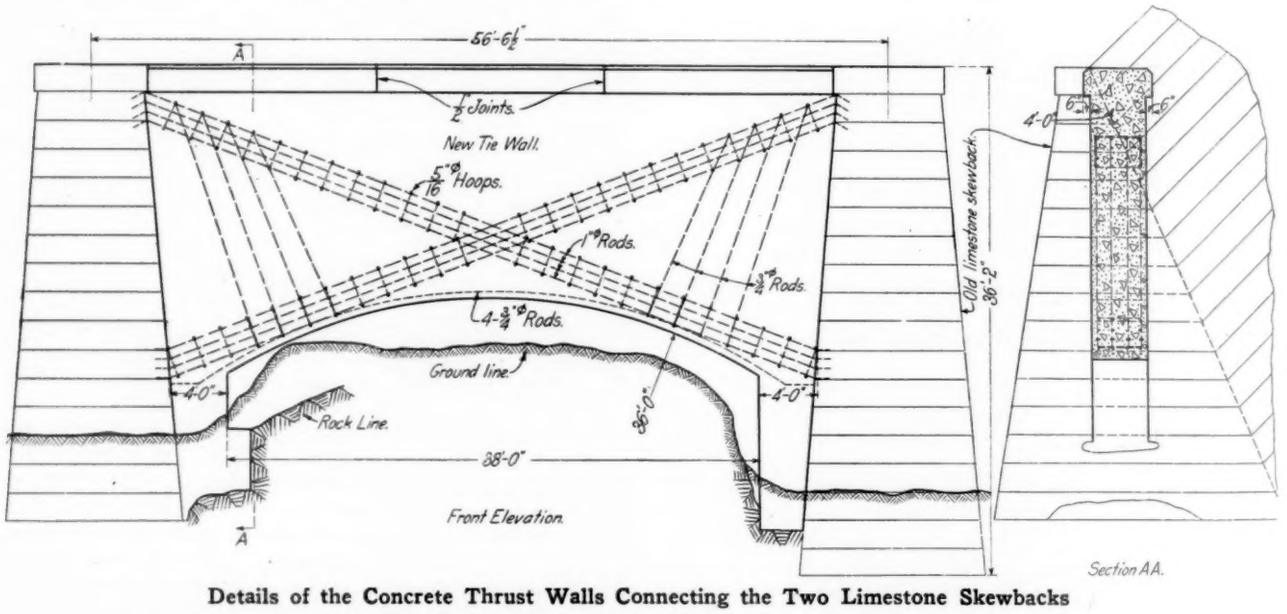

**Details of the New Waterproof Deck Construction**

The character of this construction is shown in one of the drawings and consists essentially of a copper-steel plate covering over the floor beams and stringers, the track load being transmitted to the stringers by means of wooden shims under the ties and planks laid on top of the stringer flanges. These blocks and planks vary in thickness and are beveled so as to give the necessary transverse slope to the deck plates so that they will drain into large gutters on the two outer sides. The blocks also served to elevate the ties a sufficient distance above the plates so that the ties will not interfere with the drainage. The gutters, which are of large proportions, are sloped to a downspout at the end of each floor panel. These gutters are also of copper-steel and have the end diaphragms welded in place. They are suspended from the steel work in such a way that they can be removed for cleaning readily. The deck plates are made in sections 3 ft. 9 in. wide with flanged sides forming transverse joints in the deck that are closed by covering the adjacent upturned flanges by a channel-shaped sheet-metal cover.

After the plates and gutter were installed they were coated with Hermastic enamel, supplied by the American Bitumastic Enamel Company of New York. The design of this deck construction is such that any of the deck plates may be slid out from under the track for the purpose of cleaning, refinishing, etc. The drawing also shows how the track deck was secured in place without interfering with the effectiveness of the drainage system. Hook bolts through every fourth tie engage the inside stringer flange, this bolt passing through the deck plate on the high end. On the outer side of the structure, the deck is held down to the stringers by means of long bolts connecting the outer end



**Structural Details at the Crown of the Arch Trusses**




**Details of the Concrete Thrust Walls Connecting the Two Limestone Skewbacks**

of every fourth tie with the web of the stringer. On the arch, the end of the tie is connected to the fascia girder by means of a short angle and bolt connection.

The drawing indicates the character of the track construction which is designed to give a minimum opportunity for accidents on a structure that is at such a high elevation above the bottom of the gorge. Ten-inch by 10-in. ties are used 15 in. center to center. In addition to standard inside guard rails, a third T-rail is placed outside the outer running rail, while still further protection against derailed wheels running off the bridge is afforded by fitting the inside edges of the timber guard rails with 3-in. by 3-in. steel angles. All timber used in the deck was treated with hot carbolineum, the ties are spaced by means of cast-iron spacers and rail anchors are used so as to concentrate expansion at the two expansion joints which are of the same type as those used on the Quebec bridge.

### Strengthening the Masonry

Not the least among the measures for the improvement of this structure was the work done on the masonry. The limestone skewbacks of the arch had shown signs of considerable weathering and were also in need of transverse stiffening. To correct these shortcomings, the entire surface of the old masonry was covered with 6 in. to 12 in. the two piers of each skewback. This was made 4 ft. wide and 16 ft. deep including a coping 3-ft. deep. It was amply reinforced with rods extended into holes drilled in the old masonry. The rock face of the bluffs behind the of "gunite" applied with a cement gun over wire mesh reinforcement, while a thrust wall was introduced between skewbacks was examined for loose rock and projecting ledges in danger of breaking off and dropping on the skewbacks if the steelwork were removed.

The abutment at the west end of the Canadian viaduct had bearings that were badly shattered. This condition was overcome by building a new pier in front of the old abutment and installing shoes for the support of the girders on the front of the old ones, the girders being equipped with new bearing stiffeners to transmit the end reaction at the new locations.

### Raise of Grade at the American End

To eliminate an objectionable sag in the track grade at the east end of the bridge, a raise of about 18 in. was made in the approach embankment as well as the approach viaduct and a considerable portion of the main structure. In the viaduct this was accomplished by inserting cast steel raising blocks underneath the columns.

All of the work done on the structure was carried on under the direction of Charles E. Fowler, consulting engineer, and H. C. Dickinson, general manager of the bridge for the owners. Terry & Tench Company of New York were the contractors for the improvement work.

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COAL PRICES IN PARIS.—The prices of the several kinds of coal, effective from March 16, 1920, were issued by the préfet of the Seine for the city of Paris, as follows: Anthracite, nut, 450 francs, or $86.85 per ton; anthracite, large, 430 francs, or $82.99; anthracite, small, 390 francs, or $75.25; run of the mine (tout venant), 400 francs, or $77.20; boulets and briquets, 425 francs, or $82.02.—*Commerce Reports.*

RAILROADS must have greater revenue. The only equitable way to provide it is to increase rates. Those who have given transportation conditions the thought they deserve know that higher rates are inevitable. The public's concern should not be centered in the justice of allowing carriers to charge more, but in the importance of quick action so that both the people and railroad management may know what to expect.—*Cleveland Plain Dealer.*

## Strikes and Continued Freight Congestion

THE COUNTRY-WIDE freight congestion continues with only indistinct changes in the movement of freight or in the prospects of clearing up the trouble, due to the five-weeks' strike. Very slow progress is made in recruiting yard crews and the fragmentary statements given out by the railroads afford no intelligible basis for marking any decided progress, each hopeful indication being neutralized by some new complaint on the part of shippers or receivers of freight. At New York the general managers, on Tuesday of this week, united in reiterating their refusal to restore seniority rights to men who are still on strike. The statement, signed by E. M. Rine, vice president of the Delaware, Lackawanna & Western, as chairman of the General Managers' Association, said:

"The status of those men who left the service of the railroad companies and thereby violated the law as set forth in the Transportation Act of 1920, has already been fully established by Order No. 1 of the Railroad Labor Board, viz.:

" 'This board will not receive, entertain, or consider any application or complaint from or by any party, parties, or their representatives who have not complied with or who are not complying with the provisions of the law.'

"Under all the circumstances we may not disregard this order, nor the procedure as required by law. The position of the railroad companies has repeatedly been made clear to the men involved in this illegal strike; they must first report for work before any consideration can be given to them or their representatives."

A succinct review of the general situation was given on May 10 by the Interstate Commerce Commission in a telegram sent by the Commission on May 10 to the mayors of fifteen cities—New York, Jersey City, Philadelphia, Buffalo, Pittsburgh, Youngstown, Cleveland, Toledo, Cincinnati, Detroit, Chicago, Peoria, St. Louis, Kansas City (Missouri), and Kansas City (Kansas).

In the message the Commission says:

"The Interstate Commerce Comimssion invites your attention and that of your citizens to the condition of the railroad yards in your city and vicinity. It does so without consultation with or knowledge of any party to the controversies which during the last five weeks have largely contributed to arresting the flow of traffic. Many thousands of men are out of employment in their several industries, foodstuffs fail to reach consumers and glut sources of supply, overtaxing banks and credit. New crops must be provided for. The effect upon shippers and consumers is felt throughout the country, and as the railroads are now operating under government guaranty the cost and loss falls upon the public, individually or as taxpayers. Without regard to the merits of any existing controversies or to the respective rights or obligations of the parties there is pressing need for co-operative action in some 15 localities which now block traffic. Yours is one of them and similar telegrams are being sent to the others. Even if the railroad yards were fully manned today existing unprecedented accumulations could hardly be fully distributed and the railroads restored to normal functioning in less than 60 days. By that time we shall have another crop to move."

In New York City the merchants continue to lay the blame for their delays and losses on the railroads, the longshoremen on strike and the truckmen in the city. The merchants, through a strong representative committee, are carrying out their plans for doing trucking independently of the union truckmen who refuse to carry freight to or from stations and docks where men are on strike; but no actual "strike-breaking" trucks are yet reported as in operation.

Spokesmen for the union truckmen complain at being blamed for all of the carting troubles in the city, when, as a

matter of fact, the business affected by their action amounts to only five per cent of the freight movement of the city.

Large quantities of freight are still being moved to and from distant cities by automobiles at great cost. Canal boats are being used to carry merchandise from New York to Philadelphia and Baltimore. At Cleveland, Ohio, package freight was being loaded last week in large quantities to go to other lake ports by water.

At Pittsburgh, Pa., on May 8, the Pennsylvania announced that the seniority rights of conductors and trainmen in road and yard service on the Pittsburgh, the Conemaugh, the Monongahela, the Eastern, the Panhandle, the Cleveland & Pittsburgh, the Erie & Ashtabula, the Marietta and the Wheeling divisions, would be merged or consolidated, this announcement evidently being intended as a new appeal to the men out on strike to return; and the men were given until Wednesday, May 12, to take advantage of the offer. William J. Tracy, the state mediator in Pennsylvania, made persistent efforts to get the strikers to return to work, but with only slight success.

The Pittsburgh & Lake Erie on the 7th issued a last notice to the yard strikers setting a time limit within which they might return but only about 50 men responded. On Monday the 10th, it was said that 500 shop men of this road failed to report for work, this action being in response to a vote taken the night before. The Bessemer & Lake Erie on the 10th placed new embargoes on freight.

On Wednesday night there was a meeting of strikers at Pittsburgh from which came loud threats of a new strike on the following morning (the 13th), which would call out enginemen and firemen of the three principal roads centering in that city, but the railroad officers and conservative observers accorded no great weight to the incident and up to the time of going to press no serious trouble had been reported.

At Altoona, Pa., agitators tried hard to induce employees of the Pennsylvania Railroad to strike but with no success whatever.

At Buffalo, N. Y., the strike of yard men continued, but officers of the railroads reported some progress each day; but all freight except perishable goods and shipments of an urgent character were subject to much delay.

At Cleveland, Ohio, the reorganization of switching crews proceeded very slowly, large numbers of the strikers having secured work elsewhere. Many large industries were wholly or partly closed because of lack of coal or other necessaries dependent on freight car movement.

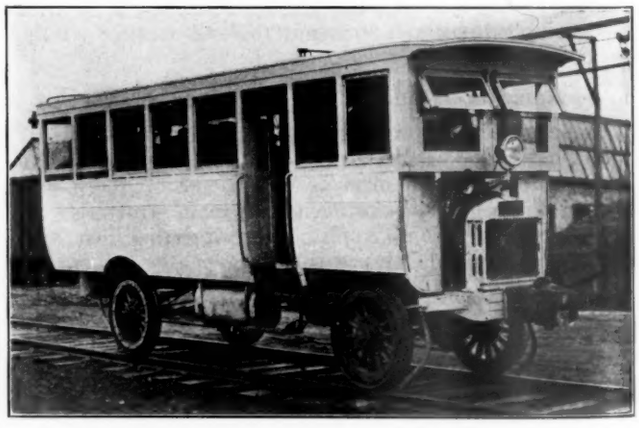
The inability of leaders of the outlaw Chicago Yardmen's Association, members of which started the nation-wide walkout of switchmen, to fulfill their promises of increased wages is leading to serious breaks between those men who are still on strike and the heads of the organization. R. S. Murphy, publicity chairman of the organization, and said to represent the insurgents among the remaining strikers, recently addressed a letter to John Grunau, president of the association, demanding an explanation why the men had not been granted wage increases and in general why the strike had failed to produce the results expected. The letter said in part: "It is logical to conclude the Labor Board will not give our members recognition or consideration until we return to work. What have you to offer us? . . . We all know that the roads have recalled their property which has been in the possession of switchmen on vacation, and are hiring great numbers of new men to man the yards. We also know that the roads are operating fairly well under the circumstances; but the question is, How can the seniority rights of the men who have followed the Chicago Yardmen's Association be restored?"

The Interstate Commerce Commission in the statement concerning the general situation which is quoted above gave no details. On Wednesday, W. C. Kendall, chairman of the Car Service Committee of the American Railroad Association, gave out at Washington a similar statement, containing more detail; but his statement like that of the Commission, gave few definite facts; this for the reason, no doubt, that the confused situation and the magnitude of the field to be covered made any comprehensive or useful brief review impossible. Mr. Kendall said that just now the situation was less acute than ten days ago, though still bad. The complaints of shippers and receivers are louder and much more numerous, though the amount of freight actually delayed has been somewhat reduced. Appeals for relief now pouring into Washington are addressed to the Interstate Commerce Commission, the Railroad Administration, and to members of Congress and reports of thousands of cars choking gateways are literally too numerous to mention. Mr. Kendall's most immediate trouble is with coal cars. Commercial stocks of coal have been depleted and the railroads are trying to fill up the gaps caused by their confiscation of coal in transit.

On April 10 the total number of cars "tied up" as reported to the Car Service Committee was 288,000, but the latest reports reduce this number to 235,000. Mr. Kendall estimates the car shortage this week, as measured apparently by reports which indicate only the more pressing needs, as 82,411 cars.

## A Motor Truck for Short Haul Traffic

THE PALATINE, Lake Zurich & Wauconda has introduced a motor truck to facilitate freight and passenger transportation on short hauls. The truck was manufactured by the Four-Wheel Drive Auto Company of Clintonville, Wis., and travels on a 16-mile track from Wauconda, Ill., to Palatine. It is provided with flanged wheels and is equipped as shown in the illustration. In addition, the truck has a trailer capable of carrying five



**Motor Truck Used on Palatine, Lake Zurich & Wauconda**

tons of baggage and freight. Reports from the officers of the railroad company indicate that the truck can handle a varied type of work economically. Records covering its maintenance and upkeep, although not complete and for only a brief period, show a total expense of 17½ cents per mile. These figures represent a daily mileage of 64 miles and are based upon a depreciation rate allowing the truck a life of 3,000,000 miles.

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PENNSYLVANIA RAILROAD STOCKHOLDERS on April 1, numbered 122,921, an increase of 1,335 over March 1, and of 13,502 over April 1, 1919.

# Western Roads Apply for Rate Advance

## Samuel M. Felton Shows That $352,000,000 Additional Revenue Will Be Required by These Roads

WASHINGTON, D. C.

THE RAILROADS west of the Mississippi river on May 6 filed with the Interstate Commerce Commission proposals for advances in freight rates of 24 per cent, in order to increase their revenues by $352,893,000 a year. This amount, they contend, is the minimum necessary to bring their net income up to 6 per cent on a property investment of $8,963,883,000.

Samuel M. Felton, president of the Chicago Great Western, as chairman of the Western executives' rate committee, in presenting the application, laid stress on the inadequacy of present railroad facilities to handle efficiently the growing traffic of the country, and the need for the immediate outlay of hundreds of millions of new capital for cars, engines and additions and betterments.

The application requested that the Interstate Commerce Commission proceed under the provisions of the new transportation act to investigate and determine the increases in freight rates required by the carriers in order that their net revenues may be as contemplated by that act. An abstract of Mr. Felton's statement follows:

A statement is attached giving the combined operating revenues and expenses and net revenues and net railway operating income of Class I roads in the Western district for the years 1916 to 1919, inclusive, as audited, also for the year 1919 so adjusted as to reflect more nearly present conditions, as follows:

| Calendar year | Net revenue from railway operation | Operating ratio | Net railway operating income | Decrease compared to 1916 |
|---|---|---|---|---|
| 1916 | $537,207,096 | 63.01 | $460,181,522 | ..... |
| 1917 | 544,207,942 | 66.46 | 431,359,919 | 6.27% |
| 1918 | 410,016,546 | 78.30 | 305,884,143 | 33.53% |
| 1919 | 394,382,424 | 80.67 | 261,456,373 | 43.18% |
| 1919 Adjusted | 331,057,407 | 83.36 | 186,027,141 | 59.57% |

Comparing 1916 with 1919 there was in the latter year an *increase* of 5.97 per cent in revenue ton miles, and a *decrease* of 5.56 per cent in freight train miles, while in revenue passenger miles there was an *increase* of 32.68 per cent, and in passenger train miles a *decrease* of 8.16 per cent. Ordinarily these conditions would have resulted in a substantially lower operating ratio and likewise a substantial increase in net railway operating income, while the foregoing table shows that the contrary was the case, the explanation being that the economies effected through heavier train loading and the increased revenues resulting from advances in both freight and passenger rates were more than offset by the tremendous increase in the operating expenses, due to higher wage scales and increased costs of fuel, material and supplies. The decrease in net railway operating income in 1919 as compared with 1916 was accompanied by an increase in property investment of $648,049,958, with the result that for the year 1919 the return on property investment decreased 62.54 per cent below that of 1916. These figures demonstrate that the present revenues of the carriers are inadequate either to absorb the increased expenses of operation or to provide that fair return upon the value of their properties required by the transportation act; they fall short of the amount which the government has guaranteed for the period between March 1 and September 1, 1920, and the only way in which the requirements of that act can be met is by substantial increases in rates.

Paragraph (3), Section 422 of the Transportation Act, provides, "That during the two years beginning March 1, 1920, the commission shall take as such fair return a sum equal to 5½ per centum of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of one per centum of such aggregate value to make provision in whole or in part for improvement, betterments or equipment, which, according to the accounting system prescribed by the commission are chargeable to capital account." The immediately preceding portion of the same paragraph provides, "In making such determination it shall give due consideration, among other things, to the transportation needs of the country and the necessity (under honest, efficient and economical management of existing transportation facilities) of enlarging such facilities in order to provide the people of the United States with adequate transportation." In order to determine the rate per cent to be applied for the next two years the commission must therefore take into consideration the transportation needs of the country. The situation requires prompt as well as adequate treatment. The maintenance and growth of national prosperity are dependent upon adequate transportation facilities. As is well known, these facilities are not commensurate to present demands.

There is congestion at many points. Lumber and grain movements from the northwest are choked back because of insufficiency of available equipment, and the same is true of fruit shipments from the west, grain from the middle west, and coal and coke, ore, vegetables, automobiles, manufactured articles and merchandise in other sections. There is a continually increasing demand on the part of the traveling public for more passenger equipment, more frequent train service, and better accommodations.

All this calls for more and better equipment. The needs of the railways of the entire country at the end of federal control have been estimated by a committee of the railway executives as follows:

| | |
|---|---|
| 100,000 freight cars | $370,000,000 |
| 2,000 locomotives | 130,000,000 |
| 3,000 passenger cars | 90,000,000 |
| 1,000 baggage cars | 20,000,000 |
| | $610,000,000 |

This makes no provision for normal replacements and additions in 1920 and thereafter. Some portion of this $610,000,000 can probably be raised by loan from the fund of $300,000,000 provided for the purpose in the transportation act, but the bulk of it must be raised by the railways on the basis of their own credit. Large amounts must also be expended for other additions and betterments.

Particularly is there a great public and national need for the building of railroads into the undeveloped and unoccupied areas in the great country west of the Mississippi river, so that there may be a greater production of food of all kinds, of lumber and other building materials, and of other natural resources.

The population of the country of 105,000,000 will, within a relatively few years, be 125,000,000, and the problem of providing food, fuel, shelter and the protection of the general welfare of the people will become more and more pressing. A sound policy of national growth and development requires that transportation facilities be kept abreast at all times of the needs of the country. This is not the case today, and many parts of the west are much in need of the extension of existing roads and the building of new ones.

In 1920 and 1921 about $430,000,000 of maturing obligations of western carriers now bearing low rates of interest, some as low as 4 per cent, must be refunded.

The cost of new capital is more than 7 per cent per annum, even to those railroad companies whose credit is of the best. The government Victory Loan notes are currently selling on a basis of return in excess of 6 per cent. New in-

dustrial issues with which railroad financing must compete are offering returns of over 8 per cent, in addition to liberal commissions for their sale and distribution, and underlying railroad bonds may be bought on a basis yielding 7 per cent, and in some instances more than 8 per cent. Furthermore, European markets which have heretofore been available for American railroad issues are now closed to them, and those markets are in fact absorbing surplus funds of this country. As illustrative of the worldwide revolution in credit conditions the Bank of England has recently advanced its discount rate to 7 per cent—a step which has been taken only twice since the panic of 1873.

In considering the financial situation confronting the carriers it must be noted that the effect of the existing system of taxation in the United States is to absorb for treasury needs by far the larger part of the surplus of the incomes of the well-to-do people, which has heretofore been devoted to investment in useful enterprises and developments, and thus largely to eliminate that source of capital supply from investments in additional railroad facilities. The appeal for new capital must accordingly be made to persons of moderate means, who still have some but not a large surplus for investment and therefore must reach and attract a much larger public than heretofore. Moreover, persons of moderate means naturally seek investments bringing large returns and are accordingly likely to be attracted to industrial in preference to railroad investment opportunities. If, therefore, new capital is to be obtained from this important source, the returns from investment in railroad securities must be made substantially more inviting.

It seems palpable from the foregoing that the commission in the exercise of the discretion vested in it for the two-year period beginning March 1, 1920, should so adjust the rates of the carriers that their net operating income will be equal to the higher rate of return which it is authorized to prescribe by the transportation act. The maximum of 6 per cent is the minimum which can be justified at this time. The fact that on the money advanced by the government during federal control for additions and betterments and for current liabilities, as well as for loans to be made to the carriers out of the revolving fund created by the transportation act, the government exacts an interest charge of 6 per cent, is also persuasive that the carriers should at least be permitted to earn an equal return on their value.

Last November, with the return of the roads to private management impending, there were appointed by the Association of Railway Executives various committees to study the situation for the purpose of developing the necessities of the railroads as to increased revenue. To this end a questionnaire was sent to all the railroads calling for data as to their property investment, revenues, expenses, rents and all items affecting the income account, both federal and corporate, for the year ended October 31, 1919. That year was selected because the questionnaire was sent out in December, 1919, and that was the latest available year at that time.

The results of the questionnaire with subsequent adjustments as explained hereinafter may be summarized as follows:

RESULTS FOR YEAR ENDED OCTOBER 31, 1919, OF 185 RAILROADS AND SYSTEMS (CLASS I, II AND III) OPERATING 138,244 MILES OF ROAD

| | |
|---|---|
| Property investment | $8,963,883,753 |
| Six per cent return on property investment | 537,833,024 |
| Net railway operating income, adjusted | 184,939,759 |
| Deficit | $352,893,265 |
| Total freight revenue for the year ended October 31, 1919 | 1,475,695,163 |
| Increases in freight rates needed to cover deficit under 6 per cent return | 23.91% |

With regard to the income account, the questionnaire provided for adjustments by additions to and deductions from revenues, operating expenses, taxes, rentals, etc., so as to produce an income account which would reflect the wages, prices and conditions as of October 31, 1919, for the full year. The replies have been thoroughly examined and tested, and where found necessary, corrections made so that the figures presented in the compilation of results reflect as clearly as possible the actual conditions as of that date.

Subsequently increases in wages have been granted to employees, demands have been made by the owners of privately operated refrigerator cars for increased mileage payments by the railroads, and the decision of the Interstate Commerce Commission granting increase in mail pay to the railroads has become effective, and those items have been computed and added to or subtracted from the results produced by the questionnaire compilations.

To the amount thus ascertained has been added the amount necessary to take care of the recent increase in the price of coal and the increase in feedral income tax which will result from increased net income, making the additional revenue needed $352,893,265 to produce a return of 6 per cent on the property investment.

The first table on the preceding page shows the net railway operating income of Class I roads for the calendar year 1919 similarly adjusted as nearly as possible from the data at hand. On the basis of these figures an increase of 23.4 per cent in revenue is required to yield a return of 6 per cent on the property investment of Class I roads based on the calendar year figures. A study of the operating results of Class II and Class III roads, as disclosed for the year ended October 31, 1919, demonstrates that if the operation of those roads were included the percentage of freight revenue required for all roads, if based on calendar year figures, would at least equal that based on the October 31, 1919, year.

In the foregoing compilations the carriers have used as the aggregate value their property investment accounts made up of investment in road and equipment and materials and supplies as the best estimate practically available at this time. It is confidently believed that for the reasons advanced at the public hearing on March 22 this sum is the minimum conservative estimate of present aggregate value and that the definitive valuation to be made by the commission will be greatly in excess thereof.

The carriers have carefully considered whether a part of the necessary increased revenue could be obtained from passenger traffic and are of the opinion that it would be inadvisable to undertake to increase passenger fares at the present time, and furthermore it is exceedingly difficult to estimate what increase in revenue would actually result from increase in passenger fares if made. It is believed that the increase should be applied to all freight traffic, both state and interstate, and be apportioned as uniformly as practicable alike on all classes of commodities. Well recognized and long standing differentials and relationships should be observed, as far as possible, and it is anticipated that individual tariffs will be checked accordingly and that some of the important adjustments can be determined before the hearings of the commission and others before the decision of the commission is finally rendered.

Summing up, there is no evidence to warrant a belief that either the cost of labor or materials will in the near future reach a lower level than that now in effect and much evidence to the contrary. The figures compiled do not and cannot tell the whole story. We are in a period of uncertain industrial conditions, uncertain price levels and high money rates. The public demands, and justly so, a higher standard of service than that now being accorded and is, we confidently believe, entirely willing to pay what is reasonably necessary to obtain same. This can only be accomplished by liberal treatment in the matter of increased revenues, thereby enabling the carriers to meet their maturing obligations and to secure the additional capital which is requisite to the proper performance of their duty to provide for their patrons efficient transportation service. For these purposes the situation demands increased revenues sufficient to yield at least 6 per cent on the conservatively estimated aggregate values above set forth.

# Annual Convention of the Air Brake Association

## Proceedings Dwelt on the Value of Adequate Maintenance from the Operating and Revenue Standpoint

DESPITE UNFAVORABLE CONDITIONS resulting from the recent widespread railroad strikes, from which the roads have not all fully recovered, the twenty-seventh annual convention of the Air Brake Association opened on Tuesday morning, May 4, at the Hotel Sherman, Chicago, with a good attendance, which was retained throughout the later sessions. Following the invocation and address of welcome, Frank McManamy, manager, department of equipment, division of liquidation of claims, United States Railroad Administration, delivered an informal address, which was followed by the address of T. F. Lyons, president of the association.

### Mr. McManamy's Address

In his talk Mr. McManamy offered two suggestions for the consideration of the association. He first drew attention to the comparatively small number of men who are charged with the responsibility of supervising the maintenance and operation of air brake equipment. This was brought out forcibly by comparison with the equipment under the supervision of the road foreman of engines. Each road foreman supervises the operation of the locomotives on one division or less, these locomotives always remaining on the division and running in to one or the other of the terminals at least once every 24 hours where they are available for necessary repairs. Usually one air brake supervisor, alone or with comparatively few assistants, must supervise the air brake equipment in operation on an entire system, much of which, in the case of freight cars, he may never see but once during its life.

Mr. McManamy suggested that air brake departments need re-organization to provide more supervisors directly responsible for air brake conditions, to provide adequate equipment for making repairs, not at one terminal alone but at every terminal on the road, and he pointed out that to get these things the support of the managements must be obtained. As one means of securing this needed support, he recommended that the Air Brake Association affiliate with the American Railroad Association, as such affiliation would bring the recommendations of the air brake men of the country in a position to receive the backing of an authoritative body. In closing, Mr. McManamy paid a warm tribute to the support given by the members of the association and other railroad men to the Railroad Administration during its period of control.

### Address of the President

In his address, President Lyons dwelt particularly on the responsibilities and advantages of the members attending at the convention. Foremost of these is the responsibility of taking such an interest in the discussion as will insure that each subject is thoroughly covered, the time and labor expended in the preparation of papers and committee reports meriting the most careful attention by the members. One of the benefits from convention attendance which Mr. Lyons dwelt upon was the opportunity to talk "shop" with other air brake men outside of the convention hall, from which talks are obtained many valuable suggestions directly applicable to the solution of his own problems by each member.

### Better Maintenance of Air Compressors*

By Mark Purcell
General Air Brake Inspector, Northern Pacific.

When direct inquiry is made, the usual impression is that compressors are giving good service. At the same time service records may show a large amount of wheel sliding and breaking in two of trains that, at first, does not appear to have any relation to the manner in which the compressors are operating, for which the compressor is largely responsible.

If a compressor runs slow, or for any reason raises pressure slowly, there may not be enough accumulated after a brake application to make a proper release, with the result that a part of the brakes only are released and wheels are slid or drawbars pulled out. With passenger trains, passengers are annoyed and sometimes injured, by rough handling of the train, and still the compressor has not actually refused to work.

We find that most of the low efficiency and some of the failures are due to lack of repairs, or the quality of the repairs made being below often only slightly the standard required. In some cases it is an error in a single feature, but more often a combination, such as a number of leaks, any of which may be too slight to cause trouble, yet when combined are serious. This applies more particularly to compressors having steam and air cylinders compounded, on account of the balancing effect that may be caused by leakage.

It is not uncommon to find a compound compressor that is chronically inefficient, and be advised that one part after another has been repaired or replaced, until nearly all of the working parts have been gone over, and yet the operation is not improved. Some such cases are a matter of record, where a careful inspection showed everything in fair condition, except that the high pressure air piston rings were 3/16 in. to 5/16 in. open, or rings in both high and low pressure air pistons were 3/16 in. to ¼ in. open when the smallest part of cylinder, or rings in some of the pistons of the main valve were ⅛ in. to 3/16 in. open and a poor fit in the grooves. When these were properly repaired the compressors worked properly.

Recommended standards to cover repairing and adjustment of the different parts of compressors have been published extensively and discussed ever since the cross compound compressor came into use, but general observation would indicate that these are not taken seriously. On this account the general standard of service of these compressors is considerably below what may reasonably be expected and obtained by uniformly raising the standard of work done in maintaining them at slightly increased cost, and by simply following standards such as those outlined in its recommended practice by the Air Brake Association.

The number of engine failures chargeable to the air compressor alone, indicates the need for improved compressor maintenance, and this is emphasized by the other troubles that can readily be traced directly to a lowered compressor efficiency.

#### Discussion

The paper drew out a lively discussion which, however, dealt more with the various causes of failure, particularly of the cross compound pump, than to the details of maintenance. One of the most frequently mentioned causes of failure was

*Submitted by the North-West Air Brake Club.

improper lubrication, there being a diversity of opinions expressed and methods described for oiling the air cylinders, but a general agreement that a satisfactory system of lubricating these cylinders has yet to be developed. One of the measures to be taken to avoid air pump failures and excessive maintenance is to give close attention to brake pipe leakage and in doing this not to overlook the brake cylinder.

The members quite generally agreed with the author as to the desirability of tightening up generally on air compressor maintenance, one of the reasons particularly stressed being the damage done in service by failure of the brakes properly to release in cycling which is frequently caused by the inability of a poor compressor to raise the main reservoir pressure within the time allowed by the cycle, even though it may pass the condemning test.

## Terminal Tests of Air Brakes

By W. P. Borland
Chief of the Bureau of Safety, Interstate Commerce Commission.

There is no disposition on the part of the Interstate Commerce Commission at the present time to take extreme measures, nor to assume an unreasonable attitude in its administration of the power brake provisions of the safety appliance law; but the time has arrived when better observance of the requirements of law by those who are responsible for the condition of air brake equipment may well be insisted upon.

The percentage of non-air cars now in service is so small as to be negligible. In air brake tests of 1,196 trains departing from terminals last year, comprising a total of 41,846 cars, inspectors of the Bureau of Safety found but 6 non-air cars. There is no longer any lack of available equipment, and any failure to comply with the requirements of law must be ascribed to neglect of the condition of equipment.

In the terminal tests above referred to our inspectors found 330 cars with brakes cut out and 1,947 cars with inoperative brakes. It is a matter of common knowledge that these terminal tests on departing trains do not correctly disclose actual operating conditions, for the reason that when the presence of a government inspector is known more than usual care and diligence are exercised in inspecting and testing brakes, as well as in setting out or repairing cars with defective brake equipment. As a result, reports of such tests are misleading and indicate better conditions and practices than actually exist.

In order to obtain a check upon the true condition of air brake equipment in general, tests of trains upon their arrival at terminals have also been made during the past year. In some instances the contrasts between the condition of arriving and departing trains are extreme and striking; for example, in one yard from which trains were departing with 100 per cent operative brakes, trains were arriving with as low as 56 per cent operative brakes. Of course it is as much a violation of law to haul a train into a terminal as away from a terminal with less than the specified minimum percentage of operative brakes or with associated power brakes not used and operated.

The fact that prosecutions have not generally been filed in the past, except in cases where trains have departed from terminals with inadequate brake equipment, does not alter the requirements of law. In connection with these arriving tests, it should be noted that they serve merely to disclose cut out or inoperative brakes; in the reports of these tests there is nothing to indicate whether or not the brakes classed as operative are in effective and efficient condition. Statistics for the first year based upon these arriving tests will not be complete until July, but the results of these tests will be set forth in the next annual report of the bureau, and will probably be published in detail in order to show the actual condition of air brake equipment in use.

It goes without saying that the terminal air brake tests conducted by the railroads, both arriving and departing, should be much more comprehensive and thorough than the inspections and tests made by the government inspectors. The tests made by the government inspectors are designed merely to indicate the general condition of air brake equipment for the purpose of ascertaining whether or not the law is being complied with.

It has been found that repair work was not being properly done. In one case in the middle west one of the bureau's inspectors made an air brake test on a train of 97 cars, in which the brakes on 17 cars were found inoperative, the majority of them being refrigerator cars. The triples on six of these cars bore stencil marks indicating that the triples had been cleaned within a month, but outward appearances led the inspector to believe that no work other than stencilling had been done on them. Subsequently an investigation was made at points where these triple valves had been stencilled and one triple valve was found newly stencilled that had not been cleaned; and on another newly stencilled car the dust collector was full of dirt and corrosion.

It is essential that air brake men be continually on the alert with a view of detecting and correcting improper maintenance and repair work resulting from ignorance, incompetence, lack of proper facilities, or slip-shod methods.

In many locations tests which are intended merely to show that brakes are operative are insufficient to meet operating requirements; it is essential not only to have operative brakes, but also to make certain that the equipment is in effective operating condition, including foundation brake rigging, brake cylinder, triple valve, retaining valve and all piping. Inoperative and inefficient brakes combined have resulted in numerous violations of the air brake law on mountain grades. There are a number of mountain grades in various parts of the country upon which it is common practice to control trains by means of hand brakes, holding the air brakes in reserve and using them only in case of necessity or emergency to supplement the hand brakes. Proper maintenance of present equipment is all that is required to permit trains to be handled safely on these grades by means of power brakes. And it is in the terminals through which these cars pass en route to these grades that the greater part of this maintenance work must be done. Excessive leakage and defective retainers were among the prevailing conditions which required considerable attention.

The order of the commission of June 6, 1910, requires that not less than 85 per cent of the cars of a train shall have their brakes used and operated by the engineer of the locomotive drawing the train, and that "all power-brake cars in every such train which are associated together with the 85 per cent shall have their brakes so used and operated."

The minimum percentage requirement of this order is generally understood and recognized, and it is an infrequent occurrence that a train is hauled from a terminal having less than 85 per cent of the cars equipped with power brakes in operative condition. But in addition to the minimum percentage requirement specified, the order reiterates the provision of law that all power-brake cars in a train which are associated together with the specified minimum percentage shall have their brakes used and operated. It is common practice for trains to leave terminals having cars with inoperative brakes, or having brakes cut out, notwithstanding the fact that facilities are available at such terminals for making repairs or replacements necessary to place all power brake equipment in proper operative condition.

Strict observance of the associated car provision of the law, as applied to trains leaving terminals or other points where facilities for making repairs are available, would result in

100 per cent operative power brakes in practically all trains leaving such points. The number of violations of the minimum percentage requirement would also be reduced, for the reason that trains now frequently leave terminals with barely 85 per cent of the cars having power brakes in operative condition, and if the brake equipment on additional cars becomes defective en route, or if cars with defective brakes are picked up, or if the cars having operative brakes are set out, the train then has less than the minimum of 85 per cent required.

If required to do so in order to bring about necessary air brake improvements, the Commission can adopt a different policy in the administration of the air brake law, and the existing minimum percentage required can be increased. But it is to be hoped that the railroads themselves are fully alive to the needs of the present situation and will voluntarily take such steps as may be necessary. Proper action by the Air Brake Association and active co-operation of all concerned with these matters will undoubtedly go far toward forestalling necessity for further action in the matter by the commission.

## Air Consumption of Locomotive Auxiliaries

The subject of pneumatically operated auxiliary devices on locomotives was assigned to a committee subsequent to the meeting of the association held at Cleveland, May, 1918. The committee presented a report of progress at the last meeting and was continued for the following purposes:

(1) To obtain more complete and representative data concerning the air consumption of locomotive auxiliary devices.
(2) To obtain data for comparing the performance of metallic versus non-metallic packing in reverse gears.
(3) To devise a satisfactory method for testing auxiliary devices on locomotives.
(4) To submit a suitable test code for testing auxiliary devices on locomotives.
(5) To suggest and recommend suitable limits for rates of air consumption of auxiliary devices to serve as a maintenance standard and to condemn defective devices out of service.

The larger portion of the data collected and analyzed by the committee were in connection with standing tests, i.e., tests made to determine the rate of air consumption of auxiliary devices with the locomotive standing in the roundhouse. A total of 497 such tests were made on as many devices. These tests involved 111 locomotives as found on 12 railroad systems.

The first work done was to devise a method of test and prepare a suitable test code so that it would be possible to direct the making of the standing tests at different localities in a systematic and uniform manner. Likewise, it was necessary for this code to specify tests which could be made conveniently in a practical way with the rather limited apparatus and facilities which are ordinarily available at round houses.

The test code was sent out to about 30 members, with a request that standing tests be made of all kinds of auxiliary devices in use on the system with which each member was identified. In every case where the recipients of this request were able to comply with it, a number of tests were made in strict accordance with the code, and no special difficulties were reported either in following out the method of making the tests or in computing the results.

With this code the committee sent out a tentative set of condemning limits which were chosen on a purely arbitrary basis in an attempt to compromise between the degree of perfection possible to attain on the one hand and what might be regarded as excessive maintenance costs on the other hand. All the standing test data has been referred to these limits elsewhere in this report, and while this comparison shows that they would condemn a very large percentage of the devices tested, no change in the limit basis is thereby justified. It should be borne in mind that the devices tested were taken as they happened to be found in service where no accurate or reliable provisions for their maintenance were in force. It is obvious that under conditions of systematic maintenance very much better results would be obtained and it is not improbable that the limits here suggested could be materially reduced before passing the point of diminishing returns on maintenance investment. This, of course, is a matter which will be dictated by future experience with the care of auxiliary devices.

The determination of the leakage rate for each auxiliary device tested depends on the results of three tests. However, two of these tests will always be common to all devices tested on the same locomotive, so that after the first device is tested only one test will be required for each succeeding device tested on that locomotive.

### Standing Tests and Condemning Limits

Essentially, the tests developed by the committee and described in the report provide for the following determinations: first, the leakage of the locomotive piping only, with all auxiliary devices shut off; second, this leakage plus the flow through an orifice of known diameter attached preferably to the main reservoir drain cock; third, the leakage of the locomotive piping plus the air consumption of each auxiliary device in turn. These rates of air consumption are recorded in terms of strokes per minute of the compressor required to maintain a balance at 60 lb. gage pressure in the

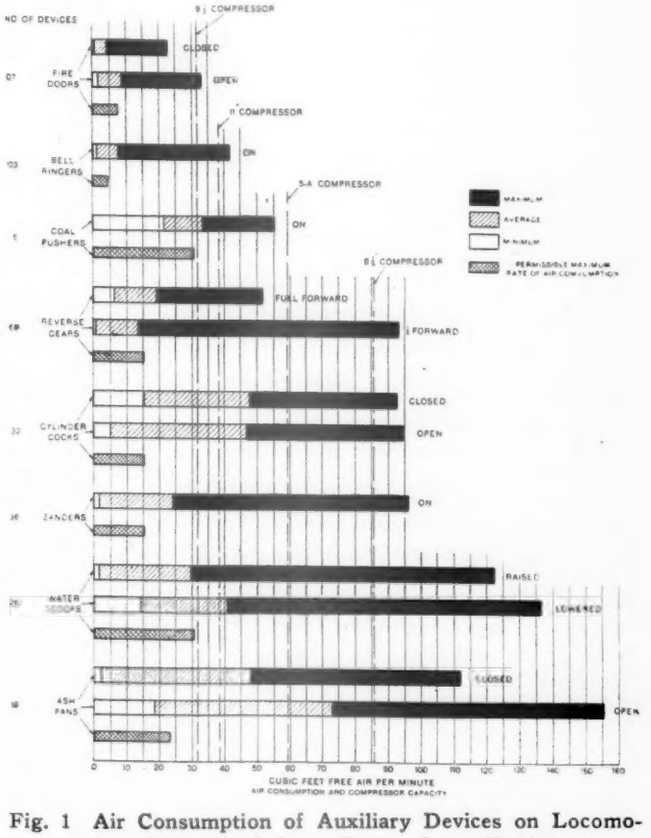


**Fig. 1 Air Consumption of Auxiliary Devices on Locomotives Determined from Tests of 111 Engines**

main reservoir. Results are computed by deducting the value for engine piping leakage from each of the other two and dividing the net figure for device consumption by the net figure for flow through the orifice. This is expressed in per cent and shows the proportion of the number of compressor strokes needed to supply the orifice which are required to operate the device. For each type of compressor the same orifice is used which is required for the Interstate Commerce Commission condemnation test.

For practical application the condemning limits proposed by the committee are expressed as a percentage of the orifice

strokes, for direct comparison with the results obtained from the tests.

The results of the standing tests made by the committee are shown plotted in Fig. 1. The average, maximum and minimum values for leakage are given for each condition under which the various devices were tested, on the basis of 100 lb. main reservoir pressure. The corresponding test code leakage limit value is also shown for each device. These values are on the 100-lb. main reservoir pressure basis to agree with average operating conditions. Passenger locomotives should be considered on the 140-lb. basis for true comparison.

The data shown is the most complete information of its kind in existence at this time. The large number of auxiliary devices tested and their wide distribution in railway service means that the values given can be regarded as a true index of the general condition and performance of auxiliary devices.

Table I shows the effect of applying the recommended condemning limits on all devices tested. The figures indicate that more than one-half of all devices tested were condemned.

TABLE I—CONDEMNING LIMITS APPLIED TO STANDING TESTS

| Device | No. tested | No. passed | Per cent passed | Per cent failed |
|---|---|---|---|---|
| Reverse gears | 68 | 47 | 69 | 31 |
| Bell ringers | 103 | 48 | 47 | 53 |
| Ash pans | 19 | 4 | 21 | 79 |
| Sanders | 136 | 46 | 33.8 | 66.2 |
| Cylinder cocks | 32 | 4 | 12.5 | 87.5 |
| Water scoops | 26 | 11 | 42 | 58 |
| Fire doors | 107 | 50 | 47 | 53 |
| Coal pushers | 6 | 3 | 50 | 50 |
| Totals | 497 | 213 | 42.9 | 57.1 |

## Running Tests of Reverse Gears

To determine the air consumption rate for reverse gears when running in service, a very complete program of tests was outlined by the committee covering a period of about five weeks' work. Owing to bad weather conditions and other unfavorable incidents, it was impossible to carry out the program fully, but a number of very interesting running tests were made. These tests included 15 gears having metallic packing and 6 gears with non-metallic packing. The results show a distinct difference in the quality of service to be expected from these two types of packing. This difference is very much in favor of the metallic packing, the comparison being obtained by dividing the gear mileage from the date of packing application up to the date of the test by the average leakage in cubic feet per minute. The figures show that where the non-metallic packed gears made 249 miles for each average cubic foot per minute leakage developed the metallic packed gears made 2,491 miles, a ratio of just 10 to 1 in favor of metallic packing. The number of years tested is not sufficient to warrant final conclusions but the results are so positive in favor of the metallic packing as to make it appear very attractive.

## Economic Value of Better Maintenance

The general aspect of all the test results indicates that the air operated auxiliary devices in use on our railroads are in a more or less uneconomical condition. They undoubtedly perform the intended functions in a very satisfactory manner, but only at the cost of compressed air. The test figures show a wide field for profitable investment in maintenance, and better maintenance will carry with it other betterments, such as less wear and tear, more perfect performance and greater reliability.

The test code condemning limits suggested for adoption will serve to reduce the waste at least one-half, and when this saving is accomplished, the association will be in a position to scale the limits downward on a scientific basis, because it will then have available actual maintenance cost figures.

Some of the facts demonstrated by the committee's tests have a very important bearing on how much it is costing the railroads to operate auxiliary devices as compared to what it really ought to cost. It is possible to point out, on the basis of compressed air used, the probable margin of saving that could be effected by a reasonable maintenance program. This is important information even when no maintenance cost data is available because when the amount of the saving is known it is comparatively easy to decide how much maintenance expense is warranted.

The data of the standing tests are presented in graphic form in Fig. 1 and cover all the devices tested. It is not permissible to base a comparison on all of the devices listed be-

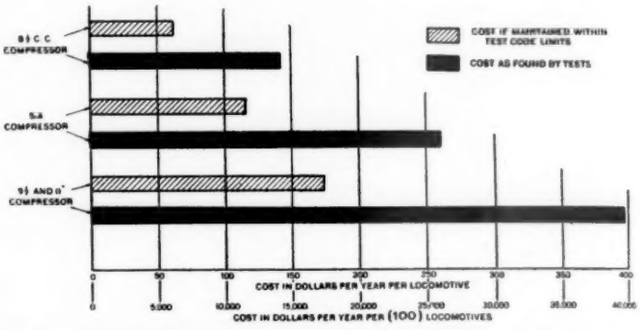


**Fig. 2 Annual Cost of Compressed Air Used by Three Auxiliaries and the Probable Cost Under Proposed Condemning Limits**

cause several of them are not subject to constant use while the engine is in service. For the purpose of this comparison only three devices are chosen: bell ringers, fire doors and reverse gears. It is assumed that the respective average rates of air consumption found for these three devices in the standing tests are characteristic of their average conditions in service. It can also be assumed that if these devices were maintained within the maximum rates of air consumption fixed by the test code limits the average leakage could be held to not more than one-half that represented by the limits. The actual figures for such a comparison can be taken directly from the data of Fig. 1 and are given in Table II.

TABLE II

| Number of devices | Average consumption in cu. ft. free air per minute at 100 lb. main reservoir pressure: Actually found during tests | Insured by test code limits |
|---|---|---|
| 103 Bell ringers | 7.75 | 2.30 |
| 107 Fire doors | 6.80 | 3.80 |
| 68 Reverse gears | 16.57 | 7.60 |
| Totals | 31.12 | 13.70 |

It will be evident from the above table that locomotives, equipped with the three devices listed would supply 31.12 cu. ft. of free air per minute to operate these devices whereas if the devices were maintained and held within the test code limits the air requirement would only be 13.70 cu. ft. of free air per minute. This difference is decidedly impressive when its meaning is expressed in terms of the money value of compressed air. Such a comparison is shown in graphic form by Fig. 2. The cost values were computed from the data by using the following assumptions which are commonly accepted as conservative for the factors involved:

(1) That the average working time for locomotives is six hours per day or 2,190 hours per year.
(2) That the average evaporation rate for locomotives will be seven pounds of water per pound of coal.
(3) That the rate of steam consumption per 100 cu. ft. of free air compressed to 100 lb. pressure will be 68 lb. for 9½-in. and 11-in. pumps, 44.7 lb. for 5-A pumps and 24-lb. for 8½-in. cross compound pumps, values which are based on actual steam consumption tests.
(4) That the price of coal on the tender is $2 per ton.

A study of Fig. 1 will readily convince those interested that the maintenance of auxiliary devices on locomotives offers a splendid opportunity for the reduction of operating costs. The two extremes of the comparison can be pointed out as follows:

1. On the basis of 100 locomotives having 8½-in. cross compound compressors, the cost per year without maintenance would be $14,000.00, and with maintenance $6,170.00, leaving a margin of $7,830.00.

2. On the basis of 100 locomotives having 11-in. compressors, the cost per year without maintenance would be $39,700.00, and with maintenance, $17,480.00, leaving a margin of $22,220.00.

The assumption of coal cost as $2 per ton or $1 per 1,000 lbs. on the tender, was taken to make it easy to convert the cost figures to correspond to any price paid for coal. It would not be unreasonable to contend that the average cost of coal on the tender is about $5 per ton, and in such event the costs and margin for economy, would be two and one-half times greater than those given in Fig. 1. It should be remembered that these figures are based on only three devices, all the others being ignored, although many locomotives have them. Those devices are, therefore, an additional source of compressed air waste, which was omitted in this comparison because no accurate data were available, and because its omission is in the direction of making the cost values more conservative. Other cost increasing factors, such as wear and tear on the compressor plant, cost of water, labor, etc., were also omitted, because exact data were lacking.

The report was signed by the following committee: C. H. Weaver (N. Y. C.), chairman; C. B. Miles (Big Four), W. W. White (M. C.), and R. E. Miller (W. A. B. Co.).

### Discussion

It was very evident from the discussion that few of the members have realized the seriousness of the losses from air leakage in connection with the operation of auxiliary devices on locomotives as they are generally maintained. Some of the members, who had applied the tests recommended by the committee at its request for the purpose of securing data to be used in the preparation of the report, testified as to their efficacy in bringing to light conditions causing excessive air consumption which might otherwise continue indefinitely so long as the apparatus functions without positive failure. No objections were raised as to the practicability of the tests.

The committee was continued to report at the next convention what progress has been made in generally establishing the tests and to what extent they have led to improved conditions. It was suggested that the executive committee take measures to bring the paper to the attention of the American Railroad Association, Section III—Mechanical.

## Relation of Terminal Brake Work to Freight Train Revenue*

By C. C. Ferguson,
General Air Brake Instructor, Great Northern

The investment in all that constitutes a railway is earning just so long as cars are moving toward their destinations. When they are not, it is losing, because interest, wages and other necessary expenses are going on. This means that switching, testing air brakes, repairing and other work in terminals are losing revenue. Such delays are necessary, but it is plain that they should be kept as low as possible.

The problem is how to test and make necessary repairs in the least time and with the minimum of switching. The North West Air Brake Club presents the following with respect to the instructions on consideration and in particular reference to Test and Repairs to Brakes on Cars in Terminal Yards, recently made recommended practice by the American Railroad Association, Section III—Mechanical.

1. Freight cars in terminal yards should have the air brakes tested as follows:

INCOMING TRAINS

2. Freight trains, on arrival at terminals where inspectors are stationed to make immediate brake inspection and repairs, shall have slack stretched and left with brakes fully applied in service application. Inspection of brakes should be made as soon thereafter as practicable and any needed repairs made, or promptly mark for repair tracks any cars that cannot otherwise be repaired.

OUTCOMING TRAINS AND YARD TESTS

3. While the train is being charged, make a visual inspection of retaining valves and retaining valve pipes, position of angle cocks and hose, and examine closely for leaks from the brake pipe and its connections, and make necessary repairs to reduce this leakage to a minimum when the brake system is charged to standard pressure.

4. When the brake is charged to standard pressure, make a 15-lb. service reduction, after which a second examination of the train should be made to determine:

a—Brake pipe leakage.
b—If triple valve will operate on service application.
c—Piston travel.
d—Brake cylinder leakage.
e—If the brakes release properly.

5. If during this test the brake pipe leakage, as indicated by the brake pipe gage, exceeds 8 lb. per minute, it should be reduced to 8 lb., preferably 5 lb., and if piston travel is less than 6 in. or more than 8 in. it should be adjusted to 7 in. All defects found shall be repaired in the yard or car sent to shop or repair track for necessary attention.

6. In addition to the above terminal tests, at last terminal inspection point prior to descending mountain grades, it must be known that a sufficient number of retaining valves are in good operating condition to control the train.

*Submitted by the North-Western Air Brake Club.

The time and a half for overtime since allowed to freight train men, and insufficient consideration given to certain features of the recommended practices warrant some changes in the foregoing.

Normally the first thing done to an incoming freight train or transfer is to make the general inspection. Here we have dead time that, by means of the incoming brake test, should be utilized to locate air brake defects so that such as are heavy may be marked for the repair tracks before switching is done and all available time employed for repairing the others.

Several of the roads represented in our club have long since demonstrated the practicability and value of the incoming brake test. In fact, the Soo Line is undoubtedly the pioneer in making this test, with the Northern Pacific a close second. This is mentioned that due weight may be given to recommendations as being based on long experience.

Our first recommendation is that paragraph 2 in the foregoing be changed to read as follows:

2. The incoming air brake test should be made with all arriving freight trains and transfers, and to permit of this the incoming crews shall leave the brakes fully applied from standard pressure by a service reduction or reductions totalling 20 lb. Inspection of the brakes shall be begun immediately and completed within 20 minutes, confining it to observance of piston travel, brakes that do not apply or that leak off and to other observable leakage, and quickly indicating defects found by suitable chalk marks. On completion of this inspection make indicated repairs or mark cars for the repair tracks, as the circumstances require.

We recognize the advantage of having the slack stretched while inspecting draft rigging and air hose, but submit that since to do it effectively will require releasing the air brakes after the stop, applying rear hand brakes, pulling out the slack, fully recharging and reapplying the air brakes, an attempt to include it would increase the amount of over-time and would decrease the reliability of the incoming brake test.

The present reading of paragraph 2 discourages the incoming test, instead of recommending it, first, by the qualification, "where inspectors are stationed to make immediate inspection and repairs"; and, second, by stating that, following the application of the brakes, inspection "should be made as soon thereafter as practicable."

This inspection is mainly to determine whether the brakes are reasonably efficient, and it will assuredly be granted that a brake which has not leaked off in 20 minutes will meet with this requirement. To appreciably extend this inspection time is unwarrantedly to delay traffic and increase expense, as it will send cars with reasonably efficient brakes to the repair tracks. The alternative is that inefficient brakes will not be detected.

While in our recommended change of paragraph 2 we have referred to "standard pressure" understood for freight to mean 70 lb., attention is called to the fact that if the test is made from a higher pressure it will pass some defective brakes as satisfactory because of the greater amount of auxiliary reservoir air to be leaked away. Hence, if any road is using a higher brake pipe pressure on any moving trains we recommend that it be reduced to 70 lb. by applying and releasing before making the test application.

The haste more or less incident to the outgoing terminal test referred to in paragraph 4 will often result in the application being made before some brakes are fully charged. Hence, a reduction of 15 lb. with long trains will result in some brakes failing to apply or to hold long enough for the inspection which would be found satisfactory if they had been charged or if the reduction had been 20 lb. We appreciate the desire to combine with this test a fairly satisfactory measure of the rate of brake pipe leakage; hence, make no recommendation for a change, preferring to observe this farther.

Clause (e), paragraph 4, is a detail which cannot be determined while brakes are applied, as here stipulated. While the object will doubtless be generally understood we feel that the wording of this paragraph could be changed to make the meaning clearer.

R. H. Aishton's circular 95 of January 8, 1920, dealing particularly with avoiding delays at terminals to lessen time and a half for overtime, suggests for each important yard the need of a yard plant for testing the outgoing train before the engine is applied. We approve of this but with the distinct understanding that such cannot accomplish the needed results unless the incoming test is made.

This is not time nor place to make other than the lightest repairs, mainly stopping brake pipe leaks. In fact, if the incoming test and indicated repairs have been made as they should be. The character of the remaining work will usually be such as to enable the despatcher to figure quite accurately as to when a train will be ready. The outgoing crew would then find the train tested and charged and requiring no more brake work on their part than making the brake pipe test immediately after attaching to the train.

Conditional on evidence that operating departments really propose to provide and make use of outgoing yard brake charging and testing plants, it would be well to add to the recommended practice instructions to cover the above points.

### Discussion

The discussion covered the whole field of freight brake conditions, which all have a bearing on the difficulties of getting trains out of terminals with brakes in condition to meet the requirements of the safety appliance law without causing excessive terminal delays. It was indicated clearly that freight brakes are in a generally unsatisfactory condition from the service standpoint and that this condition is not due to any one cause but to a large number of causes. Some of the causes mentioned were excessive brake pipe leakage, careless and unskilled workmanship in maintenance, neglect of maintenance, inadequacy of the customary type of attachments for brake cylinders and auxiliary reservoirs, retention in service of wornout brake cylinders in which tight packing leathers are an impossibility, and lack of appreciation and indifference of managements to the resulting loss in railroad operating efficiency.

That a high standard of brake maintenance is not only possible but practicable was indicated by the experience of several roads operating with a high percentage of their own equipment, which is retained and maintained at home. Several instances were given where railroads regularly send trains, in some cases with as many as 90 to 100 cars, from terminals with not more than two or three pounds per minute brake pipe leakage and one instance was mentioned where such a train departing from the initial terminal with a leakage not to exceed three pounds per minute, on arrival at the end of a 125-mile run tested but four pounds per minute.

That when once placed in good condition, the maintenance of a high standard of freight brake conditions is not a difficult matter was evident from the experience of the Duluth, Missabe & Northern, which was mentioned several times by members from other roads as having exceptionally good brake conditions. With a total of 7,000 cars in regular freight service on this line, it was necessary to set out on account of brake conditions but four cars in a period of twelve months. From an initial brake cylinder leakage of three pounds per minute, 2,000 cars after 24 months' service without cleaning, had developed cylinder leakage not exceeding a four-pound per minute maximum. Other roads reported as high as from 10 to 20 per cent of the brakes tested requiring recleaning in from one to three months following the last cleaning date.

The inability of the Air Brake Association alone to remedy these conditions because of the possible terminal delays at the outset and initial expense required to bring about a countrywide improvement of these conditions, was touched on several times. A significant point was brought out in connection with the establishment of the incoming test on one road where it has been in effect for a number of years. Some difficulty had been experienced in convincing the management of the desirability of the test, as the time available for repairs resulted in a material increase of the work done. It was found, however, that an increased credit balance resulted from the increases in legal charges against other roads for the extra work done on foreign cars and the presentation of this fact to the management secured approval for the establishment of the incoming brake test.

The convention voted to refer the subject to a committee with instructions to investigate conditions on the railroads, formulate recommendations and present data as to possible savings from a revenue standpoint from their establishment in practice.

## Other Papers and Addresses

Two papers were submitted by the Central Air Brake Club, one on the Location of Brake Pipe Ends at Locomotive Pilots, by W. W. Wood (C. I. & L.), and one on Air Signal Valve Maintenance by James Elder (C. M. & St. P.). The St. Louis Air Brake Club submitted a report on Changes in the H-6 Brake Valve, signed by W. H. Davies, R. E. Wark and F. B. Johnson. An illustrated lecture on Modern Trains and the UC Equipment, by J. C. McCune, was submitted by the Manhattan Air Brake Club.

During the course of the convention, the association was addressed briefly by W. H. Winterrowd, chief mechanical engineer of the Canadian Pacific, and F. W. Brazier, assistant to the general superintendent of rolling stock, New York Central. R. I. Cunningham of the Westinghouse Air Brake Company gave an interesting talk on air brake conditions in France.

## Business

An invitation from the American Railroad Association, Section III—Mechanical, to affiliate as a division of that organization, was brought before the association and referred to a committee which drafted a tentative set of by-laws designed to protect the interests of the association membership as it is now organized, in the event of affiliation. The matter was finally referred to the executive committee with instructions to conduct negotiations with Section III—Mechanical and report to the association at the next convention for the action of the members.

The following officers were elected for the ensuing year: President, L. P. Streeter (Illinois Central); first vice-president, Mark Purcell (Northern Pacific); second vice-president, George H. Wood (A. T. & S. F.); third vice-president, B. M. Kidd (Norfolk & Western); secretary, F. M. Nellis (Westinghouse Air Brake Company); treasurer, Otto Best (Nathan Manufacturing Company). W. W. White (Michigan Central) was elected a member of the executive committee to fill the vacancy created by Mr. Kidd's election as third vice-president.

The exhibit this year was pronounced the best in the history of the association.

# The English Transport Service in France

## Machinery, Organization and Emulation Were Responsible for Efficient and Business Like Results

By W. M. Acworth

IN THE EARLY DAYS of the British army in France, when no one except perhaps Lord Kitchener had any idea of the dimensions to which it would attain, the transport services were under a dual control. The Lines of Communication were in charge of an Inspector General who was stationed at Abbeville, and was responsible for the ports, the depots, and the railways leading up to the forward area. In the forward area there was a Director of Railways, who was also responsible for inland water transport, who reported to the Quartermaster-General. But the Director of Railways had a double responsibility. If he was called upon to build or add to railways in the forward area he took his orders from the Q. M. G.; behind that he was subject to the I. G. Communications. And sometimes not he at all, but the Royal Engineers, reporting to the Engineer-in-Chief at general headquarters, undertook to build extensions of the French metre gage light railways. Arrangements with the French military and railway authorities were also duplicated, and communications between railway transport officers in the two areas had to pass through the two independent organizations at the top.

That the dual organization was wrong, Mr. Lloyd George became convinced early in 1916, nearly two years before he succeeded in introducing unity of control under Marshal Foch on a larger scale and a more conspicuous stage. In August, 1916, Sir Eric Geddes arrived in France accompanied by Mr., now Major General Sir Philip Nash, an Indian railway official, and Mr., now Lt. Colonel Sir George Beharrell, an official of the North Eastern railway, and a very meagre staff. After a preliminary reconnaissance the three squatted in a Nissen hut at La Calotterie, three miles from the G. H. Q. at Montreuil. And here in a few weeks arose a new town of huts which furnished both living and office accommodation for a transport staff which ultimately consisted of about 130 officers and 400 to 500 men.

Under the Director there were three Deputy Directors General of Transport, commonly known as "Digits." One of them remained at G. H. Q., for the Director General of Transport in France was also Director General of movement and railways at home, and consequently had to divide his time between France and Englnad. The other two Digits exercised general supervision respectively in the northern and southern portion of the forward area. The H. Q. service at La Calotterie was organized in six directorates, inland water transport, docks, roads, construction and operation of light railways, broad gage railway construction, and broad gage railway transportation, this last Directorate exercising two main functions, liaison with the French railway companies and actual operation of the railways which we either took over from the French and the Belgians or ourselves built. The headquarters organization was reproduced on a smaller scale at the headquarters of each separate army.

The Railway Operating Division under Colonel Cecil Paget, formerly general superintendent of the Midland Railway, who lived for over two years in a train, had no light task. It employed over 1,600 locomotives, about half on our own lines and half on the French railways, and about 70,000 wagons. And whereas in the spring of 1917 only 20 per cent of the traffic of the British army was hauled by British locomotives, by the time the armistice came our locomotives were not only hauling all our own traffic, but actually doing a good deal of haulage on behalf of the French. Our own lines were worked according to home ideas, though with methods drastically modified to meet the special conditions, there being, for instance, not a fixed signal on the whole system. But on the French lines our men had to conform to the French regulations.

### A Serious Task

To cater for an army is a serious task. A rough calculation is that a division—say 20,000 men—needs a train every other day to supply it with food, forage, clothing, petrol and other daily necessaries, not forgetting mails and parcels. And there were about 60 divisions in front line areas. And the material could not be taken straight from the ports to the divisions. It had to go from the ports to be handled and rehandled at depots and sub-depots, till it finally could be sorted and loaded for the division rail head. For the whole army supplies sometimes amounted to over 10,000 tons, say 40 train loads in a day. And "supplies," in the technical sense, were less than half the total material that the railways had to carry for the armies. Ammunition alone averaged something like 50,000 tons a week. Timber, R. E. stores, railway and road material, coal, averaged as much again.

In the month of the great push towards Arras the railways handled in all something like 1,000,000 tons of traffic. And through all this room had to be found for the ambulance trains, of which during the second battle of Ypres 21 came back from the port in a single day. And a large proportion of this traffic was dealt with on lines which, so to speak, had only come into existence over night. Between January, 1917, and the date of the armistice our construction corps laid nearly 1,600 miles of line, besides dismantling 245 miles, the need for which was over, and whose materials were used for construction elsewhere. The railway men alone formed a good sized army. There were over 30,000 employed in construction and maintenance of track, another 3,500 in the shops, and about 10,000 in actual train working.

### Roads and Light Railways

Hardly less important than the railways were the roads. Somehow the roads had to be made to stand up against the enormous traffic not only of transport wagons and motor lorries, of which alone there were over 50,000 in France, but of heavy artillery and caterpillars and tanks. And the consumption of road stone, and ties and pit-props when road stone could not be got, or there was no time to lay it, was something appalling. In early days shipload after shipload of granite from Guernsey and of slag from Middlesborough was brought in. Later on local quarries, especially at Marquise near Calais, were developed. On the average something like 70,000 tons of stone were put on the roads each week. In one week the Director resurfaced over 300,000 sq. yd. or, say, 60 acres, which is precisely the area of the London Green Park. About 20,000 men and 150 steam or petrol-driven rollers were employed on the job. Some of it went by canal. There was a light railway which carried 720 tons a day to feed the water service, but Marquise in addition required 12 to 20 broad gage trains a day.

Relieving and supplementing the main railways and the roads there was a whole system of light railways with a

2 ft. gage in the forward areas. To call them a system is, perhaps, inaccurate; for, if one may quote Shelley, they were

"Withdrawn and uplifted,
Sunk, shattered and shifted
To and fro!"

They ran right up to the forward ammunition dumps, and if buried in a shell hole one minute, they were at work again the next, and always kept going, being, however, constantly taken up and relaid as the troops and guns moved. There were 1,200 miles of them in operation at one period, and in one week at the commencement of the German offensive in March, 1918, they handled 260,000 tons.

### Barge Traffic

And railways and roads were supplemented again by the barge traffic. On the canals there were barges equipped as hospitals, with doctors and nursing staff complete, which were especially useful in the case of patients with abdominal wounds. There was a fleet devoted to the carriage of sick and wounded horses. But the main traffic was in road stone, engineering stores and ammunition. At Zeneghen, for instance, behind the Ypres sector, there was an ammunition depot mainly fed by water from Calais, normally containing 50,000 tons of ammunition, and intersected by 35 miles of sidings where shells could be loaded up into trucks for conveyance by rail to different portions of the area.

Except for the local road stone and some 20,000 tons a week of material loaded direct across the Channel in barges from Richborough, the whole of the supplies for the army had to be dealt with through the congested French ports. Dunkirk, a good and well equipped port, was too near the German guns and too accessible to bombing aeroplanes for its capacity to be fully used. A lucky hit on a load of ammunition might have wrecked the town. Most people know something of the capacity of Calais, Boulogne and Dieppe. Havre and Rouen were largely occupied by the French for their own necessities, but were also used to a large extent for our Southern armies in the early days. Later on the Northern ports managed to do the bulk of the work and leave to the French the space that they badly needed. The other little ports, such as St. Valery and Fécamp, could do but little. Yet the needs of the army in France were urgent and could not wait for additional quay space.

### How It Was Done

In January, 1917, it was only possible to unload the waiting ships at the rate of ten tons per ship per hour. Fourteen months later the average had been brought up to 37½ tons. The explanation is to be found in three words—machinery, organization, emulation. Cranes by the score were brought from England and erected. As fast as it was landed, the material, instead of being allowed to cumber the quays, was loaded straight into trucks and hauled away to the interior depots. And, lastly, by the help of carefully kept statistics, the performance of each port was matched against the rest. To each port was allotted, according to its quay space and other facilities, a certain proportion of the total traffic; and if any port failed to discharge its allotted quantum of tonnage, the official in charge heard of it next day from headquarters. And there was competition not only of port with port, but of race with race. For if the figures showed that a labor company of Chinese had discharged 14 cwt. per man per hour, while a company of negroes had only discharged 11 cwt. of similar cargo, negroes worked their hardest to redress the balance of yellow over black the following week.

The ships that brought the traffic across were under the control of the Admiralty. But the traffic from Richborough, the "mystery port" as it was called at one time, was controlled by the Director General of Transportation throughout. Richborough had three functions: It was the point of origin of the Channel ferry which carried railway rolling stock on its own wheels, being duplicated towards the end of the war by a smaller ferry at Southampton; secondly, it was the departure and arrival point for the cross-Channel barge traffic to France, which amounted towards the end to something like 30,000 tons a week; and, lastly, it was the place to which a large amount of damaged material was barged from France for repair, and where large numbers of craftsmen, accustomed only to the works of peace, were trained for the kind of jobs they would have to perform later close behind the lines.

I have sketched above the organization of the transport machine, and essayed to give some idea of the functions of its component parts. How did the machine work as a whole? An ordinary transport undertaking in peace time, a railway or a line of steamers, is judged by results: does it pay? No such test was possible in this case. Money was not a primary consideration. Cost what it might, the work had to be done. But at least the cost should be as low as possible. And the transport organization in France claimed that by the use of statistics—planned on scientific lines, and kept up to date from day to day—of the work done and to be done, the closest possible check was kept, and means adapted as nearly as might be to the necessary ends. If a general asked for new transport facilities, he was requested to make a careful and detailed estimate of the amount of traffic to be handled. His requisition might imply a new broad gage railway, or a light railway, or a road, or perhaps nothing more than a dozen lorries or only a bunch of pack mules.

Every effort was made to see that steam hammers were not supplied when only nuts had to be broken. Week by week the program was discussed between G. H. Q. or the army commanders and the representatives of the Transport Service. If a big push was in contemplation, the Director General was informed in advance as to the number of troops to be employed, the number of guns, and the probable requirements of ammunition. He could thus decide how far the existing facilities would suffice, and if so, how the total traffic was to be apportioned between them; or, on the other hand, whether it was necessary to build new railways or light railways or roads, or to accumulate materials on the spot for their instant repair.

In the case of the attack on Vimy Ridge, to take one instance, the plan of attack as disclosed to the Transport Service implied the construction of considerable lengths of entirely new railways and of a new marshalling yard at Doullens; and even then the Transport Director had to point out that the rail heads immediately behind the forward lines would only suffice to deal with ammunition, supplies and ambulance trains, and that the supporting troops must be detrained ten miles or so behind the actual fighting line. When fighting in the Arras sector was fiercest, the traffic through Amiens station grew so congested that an avoiding line, 25 miles in length, was hastily built and brought into use. And when heavy guns were imperatively needed there were cases where broad gage railways were built right up to the trenches. At the battle of Messines Ridge the broad gage railway from Bailleul through "Clapham Junction," which for some weeks had been delivering the goods at "Daylight Corner" when shell fire did not interrupt the service, was actually less than a mile away from the German firing lines.

Perhaps the most dramatic achievement of the construction corps was at the time of the great German Push in March, 1918. Night after night the bridge over the Somme below Abbeville on the main line from Calais to Amiens and Paris was bombed by aeroplanes. In all haste our men constructed a deviation railway and a temporary bridge. And the very night after the deviation was completed the German bombs broke the permanent structure.

# The Need for Additional Railroad Equipment

## Railway Officers and Bankers Appear Before Senate Committee on Interstate Commerce

PROSPECTS FOR OBTAINING any considerable addition to railroad equipment this year appeared rather slim after a three-day discussion of the car shortage problem last week at Washington from the standpoint of the shippers, the railroads and the investment bankers.

An additional appropriation by the government of $500,000,000 and the immediate use of $125,000,000 from the $300,000,000 revolving fund provided by the transportation act will be needed to enable the railroads to acquire 100,000 freight cars, 4,000 passenger cars and 2,000 locomotives within a year, members of the equipment committee of the Association of Railway Executives testified before members of the Senate committee on interstate commerce on May 6. The executives appeared at the request of Chairman Cummins of the Senate committee after a delegation of shippers from the corn belt section had called on the Senate committee, the House committee and the Interstate Commerce Commission on May 5 urging the need of an improved car supply and recommending an additional appropriation of $300,000,000. They explained that they were not "knocking" the railroads but needed more cars to enable them to ship their products to market. The executives also said that a general car shortage existed and that they were unable to borrow sufficient money on their own credit, until after the result of the rate and wage readjustments is known, to buy equipment needed to remedy the situation.

Members of the Senate committee expressed an appreciation of the situation but were very reluctant to accept the proposal for an additional appropriation in view of the present state of government financing and until it has been ascertained more definitely what can be done with the $300,000,000 fund, and investment bankers who were called before the committee on the following day expressed disapproval of the plan for an additional appropriation. They declared that the market for equipment securities is very limited and that additions to railroad facilities in the immediate future must be limited to those which can be financed by the stronger roads on their own credit and by whatever amounts can be made available from the revolving fund. It was also brought out that the roads which are best able to do so have already placed orders for cars and engines to the amount of approximately $140,000,000. The question of equipment led to a general discussion of the entire railroad credit situation and while it was agreed that the transportation act would greatly improve the situation it was stated that its effect is yet to be demonstrated by concrete action by the Interstate Commerce Commission to put the rate structure on the proper level.

### Roads Need Much New Equipment

E. N. Brown, chairman of the St. Louis-San Francisco and Pere Marquette and chairman of the executives' committee on equipment, said that for four or five years the credit of the railroads had been so impaired that it was practically impossible to get enough money for cars at any reasonable rate, and that most roads could not get it at all. The condition finally became such that it was necessary for the President to take over the roads. When they were returned few roads had any cash, their equipment was not up to the usual standard and they had no means of financing additional equipment. He showed that on calculations based on the former additions to equipment and the growth in traffic 226,000 freight cars would be needed to make up for the shortage of 1917, 1918 and 1919, and 9,540 passenger cars and 3,190 locomotives. To make up this shortage instantly would cost about $1,600,000,000, but after considering the capacity of the builders and the utmost possibility of financing a minimum program had been arrived at of 100,000 freight cars, 4,000 passenger cars and 2,000 locomotives as the most that could be obtained within a year. These would cost $610,000,000.

Since January 1, railroads have ordered 27,778 freight cars, 518 locomotives and 496 passenger cars. If additional cars were to be ordered now very few would be available this fall. The best rate of interest that any railroad has been able to obtain this year on equipment trust certificates has been 7¾ per cent, and bankers have advised that it is very difficult to place such securities at this time and that $100,000,000 additional would be the maximum that can be marketed, in addition to $144,000,000 already placed. Senator Pomerene asked why the roads did not go to Mr. Plumb for some of the 4 per cent money. Mr. Brown continued that the market could possibly absorb about $150,000,000 at 8 per cent, but that the bankers had given very little encouragement, saying that the sale of securities to old investors is almost impossible. The bankers say, Mr. Brown testified, that the first thing necessary is to establish railroad credit, after which they can do some financing, but the rate question and the wage question are still unknown factors. After these two problems are satisfactorily solved he thought the railroads would find themselves in a much better condition after a few months.

Mr. Brown explained that the $300,000,000 revolving fund is by no means all available for equipment. The Interstate Commerce Commission and the executives are still working on the problem of how it shall be used, but $30,000,000 to $40,000,000 of judgments against the Railroad Administration are to be taken from the fund, also the amount required to reimburse the short lines, which is estimated at about $12,000,000 and a large part of the balance will be needed for additions and betterments. Therefore, the committee had thought that if $125,000,000 of the fund could be made available in the immediate future and an additional appropriation of $500,000,000 be obtained, orders could be placed at once for the minimum program of equipment. Mr. Brown said that the equipment could be financed only by 15-year certificates and that the five-year maturity of the present revolving fund is a handicap.

Samuel Rea, president of the Pennsylvania, said that the financial condition of the railroads is to a large extent dependent on the settlements with the Railroad Administration so that they may know whether they are to have any cash. The Pennsylvania has issued $50,000,000 of bonds at 7½ per cent and expects to use $24,000,000 of that amount to pay maturities, leaving $26,000,000 for additions and betterments. The committee has undertaken to ascertain what the roads could do if they received part of the $125,000,000 from the revolving fund divided in the proportion that each road's standard return bore to the total standard return and that the information would shortly be ready for submission to the Interstate Commerce Commission. He thought this fund should be put at work as soon as possible while the question of a larger appropriation is being considered, but that the five-year maturity should be extended at least to 10 years. If this money can be made

available at once it will help the situation in the next six or eight months, but to get the equipment within a year it would be necessary to have the additional appropriation of $500,000,000.

Senator Cummins asked Mr. Rea if the Pennsylvania would have any trouble in raising money. Mr. Rea replied that it would have very great difficulty. One hundred and fifty-seven million dollars of improvements have been put on the property during federal control which it is necessary to finance and the company has repaid $22,000,000 of this amount and has just borrowed $50,000,000 additional, but no settlement has yet been made with the Railroad Administration to determine how much can be funded. He said that roads having surplus funds, such as the Southern Pacific, the Union Pacific and the Atchison, had placed large orders for equipment. In reply to a question by Senator Cummins as to what rate would have to be paid on car trusts for 10 years guaranteed by the government, Mr. Rea stated that the interest would have to be at least 6½ per cent.

A. H. Smith, president of the New York Central, said that the 100,000 cars which are now being considered ought to have been bought in 1919, but that the only hope of relief now lies in the solution of the rate question and restoration of the credit of the railroads.

### Railroad Administration Holding Back Funds

Meanwhile, it is essential to do something to tide over the present situation so that the activities of the country, which are retarded by lack of transportation, can proceed. If orders could be placed promptly for equipment, the shippers would feel better, but if nothing is done they will become discouraged. Mr. Smith also spoke of the importance of a prompt settlement with the Railroad Administration saying that the railroads have not received a large part of their rental because it has been used up in providing facilities that it was necessary to provide during the war period, but which ought not to be paid for out of current earnings. The government, having taken the railroads to win the war, ought to fund these expenditures for a period of years and tide the railroads over a condition nearly as bad as the war. The government's discretion dominates the financial condition of the railroads today, because the Railroad Administration pays them only as little as it thinks they can get along with.

The railroads have not had the credit they should have for a good many years, and gradually the country has caught up with its transportation facilities and in some ways has passed them. The New York Central itself bought 40,000 cars in 1916 which were delivered in the latter part of 1917, and 1918, at prices half of the cost today. All of them went into the government service and the company received no allowance for them in its rental. Senator Cummins asked whether car equipment is being used to the best possible advantage. Mr. Smith said that was a broad question, but that under the existing conditions he thought it was. He said railroads are competing for labor with industries that can outpay them, which is part of the reason for the switchmen's strike, and while conditions have been restored to nearly normal on many roads some roads are handling only 60, 70 or 80 per cent of the traffic they should. As long as some men are being paid 65 cents an hour for pushing a wheel barrow, municipalities and states and counties are paying 75 cents for common labor, and carpenters get $1.25, he said it is no wonder that railroad men get disheartened and dissatisfied. Asked whether the Commission on Car Service is accomplishing anything, Mr. Smith said he thought that it was obtaining some results, but he said the division superintendent has difficulty in distributing cars on one division and that the problem is enormously multiplied when it is attempted to handle it from one office.

### Better Use of Cars

L. F. Loree, president of the Delaware & Hudson, pointed out that the revolving fund is subject to serious limitations because all of it is not available for equipment; it is limited to five years and it can be loaned only to roads that can furnish collateral security, and many roads that need it most cannot do this. He thought the car shortage condition has been exaggerated, but that the railroads would certainly need 100,000 cars within a year and that the solution of the rate question is of the greatest importance. The difficulty has been caused, he said, because people have been trying to get something for nothing for too many years, and while cars are a capital expense adequate rates are needed to pay the interest on them. Mr. Loree said that the joint committee representing the National Industrial Traffic League and the American Railroad Association, which the Interstate Commerce Commission had proposed, had discussed several plans which he thought would bring some relief, such as heavier loading of cars, increased demurrage rates, reduction of free time, a reduction of reconsignment privileges, restriction of the use of order bills of lading, etc.

C. H. Markham, president of the Illinois Central, emphasized the necessity of making provision for early car orders so that the builders can make necessary arrangements for materials.

E. J. Pearson, president of the New York, New Haven & Hartford, and chairman of the transportation section of the American Railroad Association, which had made up the estimate of 100,000 cars, said that that was a minimum figure arrived at after making several compromises, taking into consideration the capacity of the builders, the possibility of securing materials and the ability to pay for them. He pointed out that the traffic situation which confronts the railroads should not be measured by the average of last year, but by its heaviest months, and said the best that can be offered the shippers is the promise that the railroads will do the best they can with available facilities until their credit is improved by a rate advance and they can do their own financing.

The proposed 100,000 freight cars includes 20,000 refrigerator cars, 50,000 open-top cars, 20,000 box cars, 5,000 stock cars and 5,000 flat cars.

### Bankers Do Not Favor Additional Appropriation

The bankers were inclined to disapprove an additional appropriation on the ground that it would complicate the government financing and the general credit structure and it was stated that a government guaranty of car trust certificates would have the same effect. J. G. Hanauer, of Kuhn, Loeb & Co., appeared as chairman of the committee of investment bankers and instead of the appropriation he suggested that Congress extend the period of the $300,000,000 loan from 5 to 15 years, also that a large part of the sum be used for the improvement of terminals and perhaps for some increase in motive power, and that the railroads endeavor to expedite the movement of cars and reduce to a minimum the requirements for new equipment.

Senator Cummins said every one realizes that neither the merchant, the manufacturer, nor the banker can prosper without adequate transportation facilities and that it seems to be agreed that $600,000,000 should be raised this year and he thought it would be necessary to get it in some way. He asked the bankers whether the principal obstacle is distrust of the earning power of the railroads or the rate of interest. F. W. Allen of Lee, Higginson & Co., said that the principal difficulty is the limited supply of investment capital available. Railroad credit had been improved by the passage of the transportation law but the increase in rates is needed to produce the full effect.

Charles E. Mitchell, president of the National City Bank,

said the whole subject is tied up with the general financial problem and that of the three great reservoirs of capital for investment, institutions, the large individual investor and the small individual investor, the latter is the only one available. The Federal Reserve system places a limit on the credit structure measured by the supply of free gold and that has nearly been reached on account of the expansion we have been through. It is, therefore, not a question of the interest rate but where the money is to come from. Railroad financing is in absolute competition with half a dozen other kinds of government and corporate demands and in view of the world-wide conditions the rate at which railroads have already been able to borrow this year is really a very low one. If the railroad bill had not been passed, he said, they would not have been able to borrow at 7½ per cent. Senator Cummins asked whether it would be better to try to raise the money by taxation or by trying to put securities on the market. Mr. Mitchell said that any increase in taxation would be a very serious step because taxation is already having a strangling effect and he thought securities should be placed on the market as fast as they can reasonably be absorbed.

S. Davies Warfield, president of the National Association of Owners of Railroad Securities, said that the principal need of the railroads at the present time is re-establishment of their credit so that they may meet their maturing obligations and place themselves in a condition to finance themselves. He objected to the idea of using up the $300,000,000 fund until after the Interstate Commerce Commission has had an opportunity to make a thorough survey of the situation and of the needs of the various roads and said that if the government is to appropriate money for equipment it should be used for the creation of a national equipment trust to purchase and finance equipment for all the railroads. He pointed out that the railroads have been returned without a dollar in their treasuries and that they could not be expected to have credit at the present time because they cannot pay the government for the additions and betterments it has made and borrow new money on that basis. A large equipment trust which would place the cars under a central management would require less equipment than if the cars were owned by competing companies, and he did not see how Congress could be expected to put up additional money until the railroads have had an opportunity to show what can be done under the new rates. He laid great stress on the necessity of providing some way for the railroads to pay back to the government what they owe it and to keep some of the loan fund in reserve if it is necessary to meet maturities. "You want a little more light on this situation before you use up this $300,000,000 fund," he said.

Mr. Warfield also emphasized the necessity of spending a good deal of money on the equipment to improve its condition and that the same amount of money might accomplish more if used in this way. Senator Cummins said there will be no undue haste with regard to the proposed $500,000,000 additional appropriation until Congress has had an opportunity to see what disposition is made of the $300,000,000 fund. Mr. Warfield also objected to the plan suggested by the executives allocating the fund on the basis of the proportion of the standard return.

Senator Cummins and Senator Robinson agreed with him on this, saying that their understanding of the purpose of the act was that the fund should be used for the weaker roads. Alfred P. Thom, counsel of the Association of Railway Executives, said that this purpose had been largely nullified by the requirements as to security. He also pointed out that the executives had originally urged a $750,000,000 appropriation, and that the Senate had passed the bill with provision for $500,000,000, but that the House had reduced the amount.

J. R. Swan, vice-president of the Guaranty Trust Company, said that heretofore there has been a feeling among the investing public that the Interstate Commerce Commission has rather leaned toward the side of the shippers, but that since the passage of the new law it has shown more disposition to recognize a degree of responsibility to the security owners. He thought if the idea could be "got across to the investing public" that the commission is endeavoring to improve railroad credit the situation would be greatly improved, as, generally speaking, the public would rather buy railroad securities than any others. He said the railroad issues that have been made recently have been the most successful that have ever been made. The public is looking for a new deal, he said, and while the new law has been very favorably received, they want to see the Interstate Commerce Commission back it up by action. He also thought that it would be wise to proceed cautiously in issuing securities for the reason that a failure would have a very bad effect, and he also said any railroad receivership at this time would have a very bad effect.

E. B. Sweezey, vice-president of the First National Bank, said he was optimistic on the railroad situation and believed that the country is facing favorable developments. He thought the strongest roads could sell a certain amount of securities now, but that there are a large number of railroads that could not sell any, and that the law should be amended so that the Interstate Commerce Commission can loan to the railroads that cannot borrow on their own account. He said the bankers recognize the necessity of giving precedence to the railroad problem, and he thought that probably $150,000,000 to $250,000,000 might be raised on the equipment securities of the stronger roads. If the government would duplicate this amount out of the loan fund for the weaker roads he thought the problem would be solved.

Mr. Hanauer pointed out that during the last two months about $125,000,000 of securities have been issued by the stronger roads, and he thought that during the next few months it might be possible to sell a considerable amount additional, but that it would be necessary for the railroads to actually see the money before they could make much use of it.

Mr. Thom said the Interstate Commerce Commission is giving consideration to the per diem question and is very likely to raise the per diem rate.

Throughout the hearing there was considerable criticism of the policy of the Railroad Administration, which it was stated has adopted the attitude of a collection agency whose only interest is in regaining for the government the sums invested in railroad improvements during federal control, as quickly as possible.

Amendments to the section of the transportation act which provides for the $300,000,000 revolving fund to meet the suggestions made at the hearing were discussed on Monday at a conference between Senator Cummins, Representative Esch and Commissioners Clark, and Meyer, and were approved at a meeting of the Senate Committee on Wednesday. It was agreed to change the provision requiring the loans to be repaid within 5 years to 15 years, but sentiment appeared to be against increasing the amount. Another change approved was to make clear that the fund may be used for loans to meet maturities. While the Interstate Commerce Commission has taken the position that the fund may be used for such purposes, the Treasury Department has taken the position that it is available only for new facilities. It was also decided to amend the section so as to permit of car trust certificates being used as security for a loan. Senator Cummins was authorized to draft the amendments.

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TEN YEARS AGO the railroads had the ill will of the government and the people; they now have good will. That is an asset which they will value the more highly because it is newly acquired.—*Portland (Ore.) Oregonian.*

# Rate Advance Hearings Are to begin May 24

THE INTERSTATE COMMERCE COMMISSION is moving promptly to the consideration of the railroads' applications for increases in rates to comply with the standard prescribed by the new transportation law and to meet the increases in expenses which have occurred since the rate advance ordered by Mr. McAdoo in 1918.

Announcement was made on May 11 that the commission has decided to deal with the carriers in three groups, eastern, western and southern, and that hearings will be held before the commissioners at Washington, beginning on May 24, without waiting for its determination as to the aggregate values which it will use as the basis for the 5½ or 6 per cent return contemplated by the law. The applications filed by the eastern and southern roads, accompanied by statements showing the amount of increased revenue which they believe is necessary, were published in detail in last week's issue and that of the western lines, which was not filed until the later part of the week, is printed in this week's issue. Printed copies of the three applications which had been announced by the Association of Railway Executives last week, were made public by the commission in connection with its announcement of the hearing by being placed on the press table in the secretary's office.

The commission's notice to all interested parties was as follows:

"Pursuant to the purposes of section 15(a) of the interstate commerce act, section 422 of the transportation act, 1920, and at the suggestion of the commission, the carriers in official, southern and western classification territories, respectively, have filed with the commission applications for authority to increase rates for the purpose of securing from those rates the revenue which the carriers believe to be essential to the successful operation of their properties and to which they believe they are entitled as a fair return upon the value of their properties in the groups referred to.

"These applications are supported by suggestions of the carriers as to the manner in which the increase should be spread over the traffic. In general they propose to secure the revenue from increased freight rates, asserting that it is inadvisable to make a general increase in passenger fares.

"The commission has decided to deal with the carriers in three groups, to wit—those whose lines are substantially all within official, southern and western classification territories, respectively.

"It is not deemed necessary that before proceeding with hearings on these applications the commission shall determine the aggregate property values for these several and respective groups which it will use in carrying out the provisions of section 15(a). It is deemed desirable and important that hearings on these applications shall be had at an early date. The commission cannot with satisfaction to itself or to the interested parties or with justice to the issues involved assign this subject for hearing at various points before examiners. It is wholly impracticable for the members of the commission to hear all or substantially all of the evidence elsewhere than at Washington. It will, therefore, begin hearings on these applications at its offices in Washington on Monday, May 24, at 10 o'clock a. m.

"There are certain considerations of a general character applicable alike to the situation in each of these groups. It is desirable to avoid duplication of that or any other evidence in this proceeding. The commission will hear first the carriers in official classification territory, together with the evidence of a general character which is applicable to all of the territories. It will then hear the carriers in southern classification territory, followed by those in western classification territory. It will then hear evidence of a general character applicable to all of the territories in opposition to the proposals, followed by evidence in opposition to the proposals of the official, southern and western classification territories in the order named. It is impracticable at this time to indicate the time that will be devoted to each of the several branches of this subject."

The procedure at the forthcoming hearings is expected to vary somewhat from that of previous general rate advance cases, in that it will not be confined to particular tariffs previously filed by the railroads, and also in the fact that there is no longer any room for argument as to whether there shall be an increase in rates. The fact that there must be a large advance in order to put the railroads on the self-sustaining basis which the Railroad Administration never attained—because in 1918 it underestimated its increase in expenses and because in 1919 it could not settle upon the proper measure of increase—is this time the principal self-evident factor in the entire proceeding and merely the starting point of the case.

The opportunity for differences of opinion will lie in the question of the value to be taken as the basis and in the distribution of the burden of bearing the advance found necessary in the adjustment of the rates. Presumably there will be some among the numerous representatives of the shippers that will participate who will make an effort to shave the amount of the advance by contending that a 5½ per cent return is sufficient without the additional ½ per cent which the commission is given discretion to allow for what are usually referred to as "unproductive" capital improvements. Room for argument will also be afforded in the necessary speculation as to the probable volume of traffic, since tonnage as well as the rate level is a factor to be considered in determining how to produce a given amount of net revenue. It is believed, however, that the principal contention will be as to the figures to be used for the aggregate property values. The carriers have set up a figure to be the target in suggesting their book value of $20,600,000,000. As each billion dollars of reduction from that total would represent a difference of $60,000,000 in the amount of net operating income to be raised, the commission will not be without plenty of volunteer assistance in locating any weak spots or suspicious items in the property accounts and the discrepancy between the books of the Kansas City Southern and the items of value or of cost thus far found by the commission's Bureau of Valuation will probably be worked overtime.

The association of state railroad commissioners is understood to be planning an aggressive campaign along this line, and some of the spokesmen for shippers who in the past have been the most bitter opponents of rate increases are expected to concentrate particularly on the question of value, but on the whole it is believed that the atmosphere of the hearings will be considerably less controversial than that of former rate cases, and that most of the shippers' representatives will be on hand for the purpose of protecting their clients' interests in the matter of differentials and relationships.

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TRANSPORTATION is just as important to the farm hand and timber cutter in the interior of any southern state as it is to the owner of mines, mills or to the owner of railroad securities.—*Memphis (Tenn.) Commercial Appeal.*

STARVING THE ROADS will not produce cars or new mileage or passenger trains. The nation, as a whole, must judge whether it prefers to get along without new transportation facilities or whether it believes them to be sufficiently important to it to pay for them. This is the main point involved in the hearings before the Interstate Commerce Commission.—*N. Y. Journal of Commerce and Commercial Bulletin.*

# The Critical Period Under the New Railroad Law*

## The Need for Patience and Co-operation During Time of Unsatisfactory Transportation Service

By Walker D. Hines,
Director General of Railroads

THIS OCCASION furnishes a convenient opportunity for me to make to my newspaper friends some valedictory comments upon the railroad situation and particularly as to the prospects of the success or failure of the transportation act of February 28, 1920. These prospects are almost wholly dependent upon the degree of public satisfaction with current results of railroad operation. I wish, therefore, first to discuss three phases of railroad operation which will have an important bearing upon public sentiment. These phases are the service rendered the public, the relations with labor and the rates charged the public.

In discussing these matters I shall necessarily have to refer to what I regard as causes of some of the existing conditions. I shall do this purely for the purpose of stating the facts and not for the purpose of implying that blame ought to attach to the thing done or that blame ought to be attributed to any particular agency. The war brought about such radical and rapid changes in conditions that one should be exceedingly careful before charging any particular agency with blame for a result which may be the inevitable outgrowth of unavoidable conditions, or for a delay which may have been wholly unavoidable in view of the magnitude and complexity of the problem. We are entering upon a new transportation era, and the practical thing is to view conditions as they are and take them as a starting point rather than to engage in the unprofitable task of trying to decide who is to blame for existing conditions. During federal control the fashion was quite general to blame the United States Railroad Administration for every unsatisfactory feature connected with railroad transportation. This attitude was so completely wrong and its error is already being so clearly demonstrated by the facts that there is a strong temptation for me to go into the blaming business myself, but I shall refrain from any such course, because while there might be personal gratification in it there would not be any element of public service in it.

The public's paramount interest is in obtaining adequate and satisfactory service, and in the long run any scheme of management or regulation which fails to produce this result will be condemned. The first requisite, therefore, of success of the railroad managements under the new transportation act is that they shall render satisfactory service.

But it is in the highest degree important that the public shall hold in reserve its judgment as to service until a reasonable opportunity can be had for providing the necessary facilities and equipment. The war conditions have prevented the normal increase in facilities and equipment, and the termination of unified control will make existing facilities and equipment do less work than they could and did perform under unified control. Therefore, as a practical proposition, it cannot be expected that railroad service will be satisfactory until there can be an opportunity to make substantial additions to facilities and equipment.

In 1915, 1916 and 1917 the amount of provision for facilities and equipment was below normal because of the complications created by the war, including the high prices and scarcity of labor and material, impairment of railroad credit, etc.

During federal control the expenditures for the improvement of the railroads were unavoidably reduced to a minimum. During the year 1918 the demand for material and labor for other war activities was such that no railroad improvements could be undertaken except those that were believed to be absolutely necessary as measures calculated to help win the war. During 1919 the expenditures had to be kept to a minimum because of the clearly indicated policy of Congress and the public to turn the railroads back to private management just as soon as legislation could be adopted and to keep government expenditures for railroad improvements down to a minimum pending the adoption of legislation and the return of the railroads to private management.

Specifically, the acquisition of additional equipment during federal control was absolutely limited by the war restrictions during 1918 and by the financial restrictions during 1919. An impression appears to prevail in some quarters that the Railroad Administration ought to have bought additional equipment and that the present extraordinary impairment of transportation through shortage of equipment is due to some failure on the part of the Railroad Administration to buy more equipment than was bought. This impression is without foundation. During 1918 the Railroad Administration ordered all the equipment for which it could hope to get materials. Early in 1919 the director general suggested the adoption of a substantial and definite extension of federal control to admit of carrying forward a comprehensive program for obtaining needed facilities and equipment so as to insure satisfactory transportation service, but this was emphatically opposed by the railroad executives, numerous elements of the public and Congress. The railroad executives strongly opposed paying for even the equipment which the director general had ordered, and it required practically continuous effort throughout the year 1919 to induce the railroad companies to accept the equipment already ordered, and repeated arguments were made by them to the effect that they did not need the equipment which had been ordered and that it ought to be paid for by the government as a war emergency. Congress early manifested the most pronounced unwillingness to make any appropriations for the Railroad Administration beyond its absolute necessities. In such circumstances, with the railroad companies unwilling to take even the equipment ordered and Congress unwilling to encourage or provide for any further expenditures on the part of the government, the construction of additional equipment was out of the question.

On October 7, 1919, the attention of the interstate commerce committees of the House and Senate was called by me to the pressing needs of the railroads of the country for additional facilities and equipment, and the consequent necessity for promptly establishing a basis of certainty upon which the railroad companies could go ahead and make the improvements and additions which the Railroad Administration was powerless to make. The legislation, however, despite the most arduous efforts of those committees, was not passed until the end of February, 1920, and the existing financial difficulties and uncertainties have been such that it is not apparent even yet that the railroad companies have been able to make substantial progress toward obtaining the facilities and equipment which are now so far in arrears and which are so urgently needed.

In such circumstances, with an enormous volume of busi-

*Address before the National Press Club, Washington, D. C., on May 11, 1920.

ness being insistently offered for transportation, with a long suspension of the normal increase in facilities and equipment, with continued hesitation in making beginnings in that direction, and with a breaking off, to a considerable extent, of unified practices which prevailed during federal control, the public must be prepared for an unsatisfactory transportation service, and I strongly advise the exercise of patience and good temper in putting up with a service that, especially as measured by volume of freight traffic moved during periods of heavy demand, is, and promises to continue for some time to be, less satisfactory than was rendered during federal control.

### Need for Capital Expenditures

I cannot too strongly emphasize the supreme importance of putting and keeping the transportation service on a basis where it can raise the necessary funds for needed facilities and equipment. I believe an expenditure of one billion dollars per year is an exceedingly moderate estimate, on the basis of present prices, as to the capital expenditure which must be made upon the railroads of this country to meet satisfactorily the demands for transportation. The man not intimately acquainted with railroad affairs finds it difficult to understand the magnitude and pressing character of the demands for additional capital expenditures. The need for additional equipment is understood with reasonable ease, and that need alone perhaps calls for $600,000,000 or more per year, but in addition to that there is on nearly all railroads need for great enlargement of terminals, generally in costly localities, modernization of shops and engine houses and construction of additional shops and engine houses, provision of additional main tracks and passing tracks, construction of passenger terminals, the putting in of heavier bridges to admit of the use of heavier power, the reduction of grades and curvature, the installation of safety signals, the elevation of tracks in streets, the elimination of grade crossings, etc., etc. On any railroad system of considerable importance the number of demands for capital expenditure which would promote efficiency and convenience of operation is bewildering in its extent and variety, and no scheme of railroad management and regulation can permanently succeed unless it is able to draw from some source the capital necessary to make these expenditures.

Let me say in passing that this matter of putting the transportation service on a rate basis to admit of the raising of the necessary funds was a matter wholly beyond the power or the scope of the Railroad Administration. It was a matter which Congress clearly indicated by its discussions throughout the year 1918 ought to be dealt with according to the normal rate-making processes of the Interstate Commerce Commission, and this was emphasized by the passage of a bill in the fall of 1919 which provided that any rates initiated by the President should be subject to suspension by the Interstate Commerce Commission and that no intrastate rates could be initiated by the President except with the consent of the state commissions. Moreover, the federal control act contemplated the initiation of rates by the President only for the purposes of unified control and did not contemplate his undertaking to make rates designed to protect the credit of the railroad companies operating independently. A rate increase necessary to meet the costs of unified operation would apparently have been substantially less than what would be needed for purposes of establishing railroad credit under private control. It is also true that no reliable basis existed for general rate changes in the year following the armistice, because railroad operations fluctuated in an unprecedented way; first a six months' slump in freight traffic, then four months of heavy traffic and then two months of a nation-wide coal strike. The whole subject of rates sufficient to protect the credit of the railroads in private operation was properly and indeed necessarily a subject to be referred to the commission, in accordance with the permanent legislative policy to be established by Congress for private management.

A considerable amount of the funds necessary for these capital purposes can and ought to be derived from current income. The annual rental for Class I railroads, paid by the government to the railroad corporation during federal control, was about $900,000,000. It was estimated that after paying fixed charges and dividends there remained a surplus of about $150,000,000 available for capital expenditures. In addition to this, the charges to operating expenses to create a reserve fund for the depreciation of equipment produce a reserve of over $100,000,000 per year which may properly be employed in the purchase of equipment. The result is that, even on the basis of the annual rental of $900,000,000, about $250,000,000 or more would be available out of income, year by year, for capital purposes. If the new rate basis established by the transportation act shall, as is contended by the railroads, be computed on the basis of the book values of the railroad properties, the annual return to the railroads will be more than $200,000,000 in excess of the $900,000,000, so this would make an annual amount available out of income for capital expenditures of approximately $450,000,000, although this will probably be appreciably reduced by the heavy interest charges which must be paid for new money. It will be seen, therefore, that even on this basis, after obtaining for expeditures, for facilities and equipment probably $400,000,000 or $480,000,000 annually out of surplus income, perhaps $600,000,000 per year of new money will have to be raised in order to take care of needed improvements, and in addition to this the companies must raise substantial amounts, perhaps averaging $200,000,000 or more per year, to pay off existing funded debt as it matures from time to time.

Therefore the financial problem ahead of the railroad companies in raising the money needed for facilities and equipment is of the most serious character, especially in view of the burdensome rates of interest which must now be paid, and calls for the most sympathetic attention by the public and the commission.

With regard to the question of increases in railroad rates, we have another subject concerning which the public needs to show patience and philosophy. It is agreed on all hands that on account of the increased costs, which appear to be still increasing, a substantial increase in rates is necessary.

A considerable part of the public was misled into thinking during the period of federal control that the increased railroad costs were not due to the new conditions growing out of the war which were affecting correspondingly all other business activities but were merely due to federal control of the railroads. The error in this view is strikingly shown by the proposals of the railroad executives for increased rates. The railroad executives represent that, in order to pay the necessary return to the railroad companies and the necessary increases in operating costs, railroad rates must be raised so as to produce one billion dollars more revenue every 12 months, without taking into consideration any increases in wages. Yet the excess of the railroad rental and the railroad expenses over the revenues during the entire 26 months of federal control was only $900,000,000. When the railroad executives represent that they need one billion dollars more every 12 months, they strikingly prove that heavy increases in cost are not confined to federal control. After making all allowances for the increase in the compensation to the railroads over the rental paid during federal control and for all other factors, the proposals of the railroad executives confirm me in the conviction I have entertained for some time that in the present exceedingly troublesome period the cost of private railroad operation will be greater than the cost of federal control would be.

I earnestly urge upon every element of the public the most cordial acquiescence in the conclusion the Interstate Commerce Commission may reach in regard to that matter. That commission, after deciding what operating expenses are reasonable and proper and what tentative valuation shall be put on the railroad property, will adopt a rate scheme sufficient to produce the return which the transportation act contemplates, and while that rate scheme will probably involve substantial increases in rates, it ought to be cheerfully accepted by the public as an indispensable element in properly supporting the transportation system of the country and in giving it the credit which is essential to the proper enlargement of facilities and equipment.

## The Labor Situation

Turning to the labor situation, that, of course, has a vital relation to the rendition of service. I believe a brief review of recent history will be serviceable in enabling the public the better to appreciate the point of view of labor. In August, 1919, demands for increased wages, aggregating more than $800,000,000 per year, were being pressed by railroad employees. It was evident that these wage increases, if granted, would be permanent. It was necessary, therefore, to regard them as a peace-time proposition, although asserted during the period of war control of the railroads. I strongly advised that a peace-time tribunal, on which the public would be represented, should be at once created by Congress to deal with this matter, and the President so recommended. The Congress, however, was unwilling to deal with this question in advance of the adoption of general railroad legislation, and indeed railroad labor itself violently opposed any such tribunal, although it is now clear that much time would have been saved if such a tribunal had been promptly created. When it became evident that Congress was unwilling to create a wage tribunal in advance of general railroad legislation, the President took the position that while it would be proper for the Railroad Administration to readjust inequalities as between different wage schedules, the employees ought to withhold their demands for general increases pending a better opportunity to estimate the trend of the cost of living. He indicated that if the developments as to the cost of living should not take sufficiently definite shape for action by the end of federal control, which it was then expected would be December 31, 1919, he would continue to use his influence to see that justice was done to the railroad employees.

In December, 1919, it became evident that Congress could not complete its legislation in less than two months' additional time, and therefore federal control was continued until the end of February. It was obvious, however, that in that brief remaining period the Railroad Administration could not possibly undertake general wage increases and thereby forestall the action of the labor machinery to be created by the new legislation. The employees were asked again to withhold their demands until the new machinery could be organized. While both in August, 1919, and in February, 1920, the employees felt greatly disappointed that action on their demands was postponed, they loyally accepted the situation. Every other element of the public applauded the action taken in deferring this matter until it could be dealt with by the new and permanent labor machinery.

When the transportation act was approved a period of 30 days had to elapse in order to give time for nominations to be sent to the President, in accordance with regulations of the Interstate Commerce Commission, for positions on the labor board. Meanwhile the railroad representatives and the representatives of labor, in response to a request from the President, had begun a conference, as was contemplated by the new act, with a view to endeavoring to agree upon wage increases. About April 1, just about the time the 30 days for making nominations to the President had expired and before the President had had an opportunity to transmit his appointments of the members of the labor board to the Senate, the representatives of the railroad companies took the position that the amount of wage increases demanded was so great that they were not willing to discuss the merits of them with the representatives of the employees and that the whole matter must be referred to the labor board. Since the transportation act directed that an effort be made on the part of the managements and employees to agree, and since the labor board had not even come into existence, the action thus taken in breaking off these negotiations created the most widespread disappointment on the part of railroad employees. I believe this disappointment, coming on top of the long delay in dealing with railroad wages, which in turn was the inevitable outgrowth of the inability to get the legislation adopted at an earlier date, contributed very greatly to the state of mind on the part of the employees which made practicable the insurgent strikes which we have been seeing in various parts of the country.

I think the public ought clearly to appreciate that this transition from federal control to private control, delayed as it necessarily was by the inability to complete the legislation at an earlier date, coupled with the subsequent breaking off of negotiations with the managements and employees, has subjected the employees to the greatest uncertainty and disappointment, and hence I think the public should view in a sympathetic spirit any action which the labor board may take to bring about an expeditious decision upon this important problem.

I also wish to say, and I say this with the keenest appreciation of the difficulties through which the employees have gone, that I believe it continues to be of the highest importance in their own interest, as well as in the public interest, for them to maintain the splendid record of staying on their jobs which the great majority of them established throughout the difficult period of the war, realizing that the delays have been the unavoidable outgrowth of the fact of the transition to private control, which transition was itself unavoidably delayed, and that the new system must have time to get started.

I believe the labor machinery created by the new act is a highly important forward step, and when once action can be taken upon the matters which have been so long pending, and which could not have been adjusted in advance of the creation of permanent peace-time labor machinery, the labor situation will distinctly clarify itself.

## Next Two Years Critical Period

I regard the next two years as a peculiarly critical period. The opportunities for the development of discontent are very great. The increases in rates cannot inspire enthusiasm, and service is bound to be unsatisfactory, especially until a large amount of new equipment can be constructed. Yet both these factors ought to be regarded as necessary incidents of the time in which we live. If the public will philosophically adjust itself to these unfavorable conditions, and this critical period can be gone through without a revulsion of feeling which will prevent a fair trial being given to the transportation act, I believe there is a great deal to hope for in that act, although I believe further modifications will be found to be necessary.

The transportation act has established some highly important and radical reforms which I believe are clearly in the public interest. It has created a definite standard for rate-making and has given the commission the specific jurisdiction to take the responsibility of initiating rates. The act provides for the excess revenues of the exceptionally prosperous carriers being divided, so that part will become a permanent government fund to be devoted to aiding in improvement of railroad facilities. It provides a greatly improved method of studying and dealing with labor problems. It provides a uniform and exclusive control over railroad securities. Out of these provisions there will necessarily grow a closer contact

and a better understanding between the railroad executives and the commission than has ever been the case in the past, and I hope there will also grow a closer contact and a better understanding between railroad labor and the railroad executives than has ever existed in the past.

### Adequate Degree of Unification Needed

The one leading respect in which I believe the act falls short of the necessity of the situation is that the act leaves the several hundred railroad companies of the country still free to operate each on its own account. I do not believe there can ever be a successful, permanent development of the theory of private management of the railroads of this country without far-reaching and thoroughgoing consolidation into a few large systems. While the present act permits voluntary consolidations when sanctioned by the commission and requires the commission to work out a program looking toward the consolidation of the railroads of the country into a few large competitive systems, I seriously doubt whether substantial results can be accomplished in the absence of further legislative provisions which will either compel consolidations or offer such inducements to consolidations as will insure their taking place.

We cannot turn back or arrest the great currents of human progress. One of those currents is the irresistible movement in the direction of unification of transportation so as to promote the general public interest. The rate structures apply equally to the different railroads. Joint rates and through routes must be established, regardless of the selfish interest of particular railroads. The freight cars of the country are already universally interchangeable. The terminals of the country are already subjected to a common use to a large extent and must be subjected to a greater common use. Railroad wages and working conditions have been steadily moving towards a standardization for many years, and the process was necessarily accentuated during the period of unified government control. All of these elements of national scope in railroad operation must be accepted and others developed in order to promote the greatest degree of public convenience.

I do not believe this great and necessary movement toward unification for the public good can proceed as it ought to do without far-reaching consolidation of the numerous different railroad interests. At present there are perhaps 50 or 60 different railroad interests of large extent and importance and several hundred of smaller extent and importance. This condition results in conflicting interests and policies which are not only contrary to the public good but are detrimental to the best interests of the owners of the railroads. I believe, therefore, that the movement toward consolidation of different railroads must be carried forward in a definite and effective way, and that if we are to avoid government ownership we must have in place of it a very few large railroad systems through which an adequate degree of unification may be accomplished with a minimum of conflicting policies and methods.

I do not think there has been an adequate appreciation of the importance, both directly and indirectly, of the unifications which were put into effect during and for the period of federal control, and I believe a substantial economic loss will be suffered by the country to the extent these unifications are dissipated, and that eventually the advantage will have to be regained through some enforced consolidation into a few large systems.

### The Government as a Holder of Railroad Securities

One of the important things which has necessarily come about as a result of the conditions created by the war is that for the first time in its history the government has become a large owner of railroad investments. It now owns $354,000,000 of equipment trust certificates and about $490,000,000 of additional railroad debt which will be evidenced by notes or bonds. In addition it appears probable that most of the $300,000,000 appropriation made by the transportation act will be loaned to the railroad companies. The prospect, therefore, is that the government at an early date will hold approximately $1,100,000,000 of the railroad securities of the country. If, in addition, the proposals just made by the railroad executives to Congress should be adopted and $500,000,000 additional be loaned to the railroad companies, the government's holding of railroad investments would be increased to $1,600,000,000. This is perhaps one-twelfth or more of the total value of the railroads of the country. The development of such a governmental interest has been the necessary outgrowth of the war conditions, and indeed was authorized by the federal control act of March 24, 1918. The necessity for this policy has grown out of the fact that it seemed wholly impracticable under the unprecedented conditions created by the war for the railroads to derive from private sources the capital necessary to obtain indispensable facilities and equipment, and the congressional policy is merely an expression of this fundamental necessity of the situation which had become apparent even prior to the beginning of federal control of the railroads. It has been the carrying out of this proper and inevitable congressional policy that has produced the existing holding by the government. Congress has further confirmed this policy by the funding provisions of the equipment trust act, which was passed November 19, 1919, and by the funding provisions of the transportation act of 1920, contemplating the funding of the government's debt due from the railroads which was thus created during federal control. Congress in its adoption by the transportation act made an extension of this policy by providing the additional fund of $300,000,000, most of which the act apparently intended should be loaned to the railroad companies, the government taking railroad securities in exchange therefor.

In contemplating the future relations of the government to the railroads, it is important to bear in mind that for a long time to come the prospect is that the government will be the owner of an impressive total of railroad securities, and it is a question whether this total may not increase instead of diminish as the years go by.

I have no reason to anticipate that I shall have any further connection with the railroad operations of the country, and therefore I believe I can look at the present and prospective situation from a standpoint of reasonable detachment. From that standpoint my advice to you gentlemen, and through you to the people of the country, including the railroad employees, is to give the new transportation act a fair trial, to realize that the readjustments growing out of the war must take considerable time and must put transportation rates on a substantially higher basis and that service must be unsatisfactory pending large acquisitions of facilities and equipment. The prospects of success will be promising if there can be an attitude of patient support on the part of the public and a proper disposition on the part of the corporate agencies and labor agencies to co-operate with each other and with the commission.

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ELEVEN STRIKING SWITCHMEN were recently arrested at Salt Lake, Utah, on a charge of violation of the Lever and Transportation Acts. At preliminary hearing before United States Commissioner H. V. Van Pelt on May 5, the defense, in petitioning for a demurrer, alleged that the complaint did not state a public offense, that it was ambiguous, that it charged violation of two acts in one complaint, and that the men were not guilty of violation of the Transportation Act, inasmuch as they did not use physical force to gain their ends; and that the Lever Act is invalid.

# Railroad Labor Board Moves to Chicago

## W. J. Lauck Claims That Only 2½ Per Cent of the Railway Workers Now Receive Living Wages

WASHINGTON, D. C.

THE RAILROAD LABOR BOARD on May 8 terminated its hearings at Washington, which have been devoted to the testimony of the representatives of the railroad labor organizations that are asking further increases in wages, and announced that it would have a week of executive sessions before opening its permanent headquarters at Chicago on May 17, where it will receive testimony on behalf of the railroad companies at a later date. Regarding the questionnaires proposed by the railroad conference committee to be sent out for the purpose of gathering statistical information, bearing on the case, the board ruled that it would not for the present restrict or advise as to the character of the information which either side may submit nor as to the manner in which they may determine to submit data. The railroad committee had proposed to send out the questionnaires on its own account but had submitted them to the board for its approval or suggestions and the labor organizations had objected to the delay they said would be involved in compiling the information.

The concluding testimony before the board was presented by Timothy Healy, president of the International Brotherhood of Stationary Firemen and Oilers; B. M. Jewell, president of the Railroad Employees' Department of the American Federation of Labor, and W. J. Lauck, consulting economist appearing on behalf of all the railroad organizations. Mr. Healy devoted most of his statement to an attack on the position taken by Attorney General Palmer that the recent strikes have been caused by communistic activities and asserted that the government had engaged in a propaganda against labor, as being largely responsible for the high cost of living, instead of taking the necessary steps to prevent profiteering. Chairman Barton felt it necessary to ask the witness to tone down his reflections on the government.

Mr. Jewell appeared on behalf of the six shop craft unions and presented to the board the original demands which were presented to the Railroad Administration on January 7, 1919. A small increase was granted to the shop employees in August, 1919, but the general demands were held in abeyance and Mr. Jewell asked that they be allowed by the board retroactive to January 1, 1919, with the addition of a percentage to represent the increase in the cost of living since they were originally presented. Mr. Jewell said he represented 425,000 employees on roads that had been under federal control and he asked that the awards be applied to all roads. Because the conference committee declined to consider a demand that the national agreement and wage orders of the Railroad Administration be confirmed for the future the entire proposition had been submitted to the individual roads and the results will be certified to the board when reports are received. The original wage demand provided for a minimum rate of 85 cents per hour for first-class mechanics, 60 cents for helpers and various differentials above these amounts for special classes of service and for foremen. It was also asked that the rates be incorporated in the national agreement.

Mr. Jewell denied the contention that the regularity of employment of railroad shop employees is such as to justify a lower rate of pay than is paid in other industries and he submitted many statistics to show the irregularity of railroad employment. Last year, he said, thousands of shop employees had been laid off but now so many men are leaving the service because of the higher wages elsewhere that those who are left are generally working overtime, and many roads are having work done by contractors who pay as high as 90 cents an hour for work done by regular employees at 72 cents. He said the average rate for railroad mechanics paid by the Railroad Administration was 69.88 cents an hour, while generally speaking the pay of comparable mechanics in other industries varies from $6.40 to $10 a day and over.

Mr. Lauck, who as a witness for the engineers and firemen in the western arbitration case a few years ago attracted some attention by presenting a statistical theory that the "productive efficiency" of train men had increased faster than their rates of pay, pursued a different line of argument on this occasion. He presented elaborate statistical exhibits entitled "An analysis of the effect of increased wages and profits upon commodity prices," to show that the high cost of living is entirely due to profiteering and that increased wages to labor are in no way responsible for increased prices.

Mr. Lauck submitted several thousand typewritten pages of tabulations, charts, statements, and comparative statistics to show that the wages paid to labor have fallen far behind the increase in the cost of living and to show that increased prices have redounded to the benefit of capital with no corresponding compensatory return to labor. His statement to the Labor Board was concluded with the submission of the following general demands in the name of the railroad workers:

"1. Labor in general, and railroad labor in particular, must have wage increases proportionate to advances in living costs.

"2. In the present crisis, and for all time to come, producers and middlemen must be restrained from advancing prices in excess of increases in labor and material costs.

"3. Producers and middlemen must refrain from including income and excess profit taxes in their costs and passing them on to the consumer with an added profit.

"4. The principle of a living wage must be accepted and established in order that normal production may be restored and increased production hoped for in all fields of industry."

Mr. Lauck also presented a series of studies of the cost of maintaining a family at a level of health and reasonable comfort from which he concluded that the railroad employees should have a minimum wage of $2,500 a year, because, he said, even if a man has no family he should be allowed to accumulate a surplus that will enable him to get married.

Placing the sum of $2,500 as the very least upon which an American family can maintain itself in even decent poverty under existing conditions, Mr. Lauck submitted to the board compilations to show that only 2½ per cent of the railroad workers are receiving a living wage today, and he asserted that this small percentage is composed of division officials, general mechanical foremen, other supervisory groups and road passenger engineers and motormen.

"Of the whole army of wage workers in the transportation industry in the United States today," said Mr. Lauck, "44 per cent of their families are underfed, 69 per cent are underclothed and 61 per cent of them are overcrowded or inadequately housed. On the basis of what is accepted as the most accurate estimate of a bare subsistence level of earnings, which is $1,700 per year, 88 per cent of the

country's railway workers are attempting to maintain their families below a bare subsistence level. More than 600,000 railway employees do not earn, in a normal working year, $1,073, below which figure nearly three-quarters of the families are undernourished and seven-eighths are underclad.

"Here is the entire transportation system of the country, not with its unskilled alone below the level of subsistence, but with seven-eighths of its entire working force below this level, and a large proportion actually below the starvation wage. Whole classes—the largest classes in the railway service—must face the prospect of seeing their families without the barest necessities of physical wellbeing, while only a small proportion can look forward after nearly a lifetime of service, to attaining even an approximation to normal comforts.

"These statements are made conservatively. They are made on the basis of the most reliable figures in existence in the world today on the effect of various income levels on family life, namely, the studies made for the Russell Sage Foundation by Dr. Robert Coite Chapin, scrupulously revised as of this date.

### Says $1,280.30 Is Average Pay

"The average yearly wage paid to the entire number of railroad workers in the United States today is $1,280.30 for a normal working year of 306 eight-hour days, allowing nothing for sickness, emergency or irregularity of employment. Compared with $1,700, the lowest subsistence wage budget worthy of consideration, and $2,533, the bureau of labor statistics' minimum comfort budget for Washington, D. C., this average alone should be sufficient to compel immediate relief for the railroad workers of the country. So great is the issue that there can be no question as to the practicability of paying rates which will make possible for 2,000,000 families a standard of health and reasonable comfort. Let no one dare to say that it would be a good thing if it were only possible. No such 'ifs' are permissible. A living wage is the only practicable answer to the present industrial situation. It is the only possible answer in terms of citizenship. Any other answer will only postpone the settlement until conditions render a real solution more difficult—if not forever impossible."

Later the board announced that it had denied a hearing to the American Train Dispatchers' Association on the ground that its application did not comply with the provisions of the law.

## Mr. Hines Retires as Director General

WALKER D. HINES' resignation as director general of railroads becomes effective on May 15, and he is to sail at once for Europe to act as arbitrator in determining the ownership of a number of vessels, formerly under the German flag, which were given up by the terms of the peace treaty. The President was asked by a number of interested nations to appoint an arbitrator. At the same time Mr. Hines retires from the railroad business, as he severed his corporate relations shortly after becoming connected with the Railroad Administration in 1918 as assistant to Director General McAdoo, resigning as chairman of the board of directors of the Atchison, Topeka & Santa Fe.

Mr. Hines gave a "valedictory" address before the National Press Club at Washington on Tuesday evening, which is published elsewhere in this issue.

A proclamation from the White House appointing Max Thelen, now director of the Division of Liquidation Claims of the Railroad Administration, as Mr. Hines' successor, is expected before the end of the week.

Mr. Hines was born February 2, 1870, at Russellville, Ky. He was graduated from Ogden College in 1888 with the degree of B. S. and from the University of Virginia in 1893 with the degree of LL. B. He entered railway service in 1893 as assistant attorney of the Louisville & Nashville, which position he held until 1897, when he was appointed assistant chief attorney. From 1900 to 1904 he was first vice-president of the same road, and from 1904 to 1906 he was a member of the law firm of Humphrey, Hines & Humphrey at Louisville. In 1907 he became a member of the law firm of Cravath, Henderson & deGersdorff. In 1906 he was appointed general counsel of the Atchison, Topeka & Santa Fe, and in 1908 became chairman of the executive committee of that road while continuing his private law practice, and he was later elected chairman of the board of directors of the same road. In connection with his law practice Mr. Hines represented numerous important clients in litigation before the Interstate Commerce Commission.

**A Scene on the Transandine Railway**

# Recent Developments on the Railways of England

## Sir Eric Geddes Gives Some Figures on Railway Operation—Local Strike—Shopmen's Award

By Robert E. Thayer
European Editor of the *Railway Age*

LONDON.

SIR ERIC GEDDES, Minister of Transport, replied before the House of Commons some time ago to the criticisms of members of the House regarding the transport situation in England.

In speaking of the general situation he reiterated the statement which is common knowledge that the railways had been called upon to handle a very large amount of traffic which before the war was handled by coastal service and even at the present time this service had not picked up its pre-war load. The railways are hauling coal from Northumberland and Durham to London, an almost unheard-of thing before the war, and from Wales to London in quantities that were almost undreamed of before the war. He said that the country must remember that with the government guaranteed dividends to the railways there existed no direct incentive to economy on the part of those operating the railways. The incentives of profit and the advancement of the individual were required, and they had not operated since the beginning of the war. There was the sense of devotion to duty, and the management and staffs had done their work with great patriotism and zeal, but the other incentives were wanting. Besides that, there were no statistics. When the Ministry of Transport came into existence there were no returns or records showing what the railways were carrying, owing to the depletion of staffs. The income of the railways was £250,000,000, and the outgoing was £200,000,000. It was decided that there must be a proper system of check on this vast expenditure. The railways agreed that there must be such a check. That check was established. The accountants of the ministry sat with the accountants of the railway companies in checking the expenditure. That was a side of the activities of the ministry which he thought few members of the House had realized. Ninety per cent of the cost of the Ministry of Transport was justifiable on that work alone.

### Position of Railway Traffic

Dealing with the railway traffic position, Sir Eric took the 16 principal railways, proceeding on the basis that if the railways reasonably soon attained the 1913 basis they were not doing badly in the way of recovery. He said that on June 30, 1919, there were 650,000 freight cars belonging to the railways in the country, a deficiency on December, 1913, of 45,000. In December, 1919, the deficiency was down to 19,000, and it was still going down very fast. Today 40,125 freight cars were on order. For the three months ended November 30, 880 freight cars were produced per month, and for the last three months the average had been 1,668 a month. On September 30, 1919, 42,000 freight cars were waiting for repair, or 5.7 per cent of the total stock. In December that had come down to 24,000 freight cars awaiting repair, or 3.3 per cent, whereas in America 5.6 per cent of the rolling stock was awaiting repair. On June 30, 1919, there were 17,700 locomotives in use in traffic. That was 1,100 less than at the end of 1913. By December, 1919, that deficiency had come down to 293. The railways were not pushing on with passenger cars as fast as with other things, and advisedly so, because they had to consider essentials. In 1919, notwithstanding the increase in fares, passengers who bought their tickets for the journey were 156,000,000 more than the railways had ever carried in any year in their history, and in addition to that the season tickets went up by 50 per cent, which was estimated at another 100,000,000 to 150,000,000. Today they might take the carriage of passengers as nearly 300 millions more than it was in the boom year.

The only satisfactory measure of what a railway was doing was to take weight with distance, Sir Eric continued, but he had not got the ton-mile figures. He had, however, the gross freight receipts for 1919 and for 1913, and 1919 was not a year in which any increase of freight rates had been made. Irrespective of government traffic the railways earned £5,000,000 more at similar rates in 1919 than in 1913. There was a total of £21,000,000 of services performed for the government.

The actual tonnage carried during the last half of 1919 was affected very much by the railway strike, but the House might take it that it was 1 per cent less in the same period of 1913. But it was carried farther, and undoubtedly much more freight was earned. That was not a favorable figure, and it was the one blot on the statement. It was, however, steadily improving. The fourth quarter of 1919 showed an increase over the previous quarter of 10 per cent in the tonnage carried, and there was much more work done. That day he had received the returns for January of the Great Northern, Great Western, Lancashire & Yorkshire, London & North-Western, and the Midland Railways, a fairly representative bunch, and they showed another 10 per cent on top of the monthly average for the last quarter of last year. The train mileage comparing the first and second halves of last year was 4 per cent up. Everything was going up. As regarded tonnage carried he doubted whether they were not today on top of the 1913 tonnage. That was the chaos and muddle of which the railways were accused.

Of course, the ports were congested. The ports had the aftermath of the war to face. Coastal shipping was notoriously not pulling its load, and was being used for wrong purposes. The ports of London and Liverpool were usually thrown up as showing the chaotic conditions and breakdown of the railways. Liverpool always exported less than she imported. It never made its own empties; it always had empties sent to it on balance. The traffic forwarded from Liverpool—mainly dock traffic—was 26 per cent higher for the whole of 1919 than for 1913, and 1919 had a lean beginning and a fat end, and the fat end was going on. London was a far more difficult place to work because of the congestion, but it showed an increase of 5 per cent on 1913, the boom year. There were 600 freight cars a day more out of Liverpool, and 80 freight cars a day more out of London. There never would be a country in which they would not be able to find actual complaints against the railways. That was part of the reason why the railways were there. But generalizing, taking the whole figures comparing what the railways were doing today with what they did in 1913, he contended they were doing their share in the reconstruction of this country in a way that deserved credit and not blame. He asked the house to give the credit to the railway managers and the railwaymen.

A dangerous situation threatening the stoppage of the Lancashire & Yorkshire railway was cleared up at a conference between Arthur Watson, general manager of the Lancashire & Yorkshire; Ashton Davies, the general superintendent

of the line, and Mr. Abraham, president; Mr. Cramp, general secretary; and other representatives of the National Union of Railwaymen. The cause of the strike was the suspension of a driver for refusing to do additional work on his return from his regular trip. In the background was the question of the "control" system, which has been established with the object of securing the most effective use both of engines and men. There is reason to believe that the protest of the driver was not the irresponsible act of an individual, but a deliberate measure to review the working of the "control." When the driver declined to drive a particular train he had already worked seven hours five minutes, and the additional duty would have lengthened his working day to nine hours 50 minutes. The man he refused to relieve had to work twelve hours and a half. A protest against the suspension of this driver was made by the Wakefield branch, and the case was reviewed by the management, who decided that there was no reason to alter its first decision, and that the suspension must stand.

J. H. Thomas, general secretary of the National Union of railwaymen, stated that the union was behind the strikers, and would see them through. A conference was arranged and the terms of the settlement are as follows:

1. The record against the driver is to be expunged on his giving an assurance to his shed foreman that the action he took was not in defiance of the discipline.

2. The representatives of the union agreed that trainmen should continue to give effect to the instruction of the management through their "control," and that they should do all they possibly could to co-operate with the management in dealing with the large amount of traffic.

3. Having in view the desirability of securing smooth and efficient working through the control system, a committee of representatives of the company and of the men will be set up forthwith.

At a meeting of the men at Wakefield on March 25, it was agreed to accept the agreement and return to work at once.

### Railway Shopmen's Award

An award was issued on March 24 by the Industrial Court on the application made in February of the National Union of Railwaymen for an advance of 15 shillings ($3.60) a week for all men and women in railway shops, and seven shillings six pence ($1.80) a week for boys and girls, such to include all those employed in electric generating stations on railways in the United Kingdom. The claim was based on the cost of living, but the court found that the increase in the cost of living has not been so considerable as to justify any further advance on that ground alone.

The award states: "The court, after careful consideration, have come to the conclusion that there shall be a general alteration in wages by an advance in the time or day rates of 6s. per full ordinary week, or 1d. and ½d. per hour according to the custom of payment in the various workshops, and of 15 per cent on present list or net piece-work prices. The advance in the time or day rates shall apply to male workers of 21 years of age and over other than apprentices, and the advance on piece-work prices shall apply to all male piece-workers irrespective of age. The advances shall take effect as follows:—3s. per week, or ¾d. (three farthings) per hour, or 7½ per cent, as the case may be, as from the beginning of the pay period immediately following March 31, 1920, and similar advances as from the beginning of the pay period immediately following May 31.

"The advances granted are to be taken into account in the calculation of payment for overtime and night duty, and for work on Sundays and holidays, and such allowances as are computed on basis rates, and will form part of the total earnings of time and piece workers, upon which the bonuses of 12½ per cent and 7½ per cent, respectively, are to be calculated. The advance to time-workers is to be regarded as being in addition to present time rates and shall be taken into account for the purpose of fixing new piece-work prices, or calculating bonus earnings."

The court will deal with the case of men in the generating stations in a supplementary decision.

## Mark W. Potter Appointed to I. C. C.

THE PRESIDENT on May 6 sent to the Senate a nomination for the appointment to the Interstate Commerce Commission of Mark Winslow Potter, a member of the law firm of Hornblower, Miller, Garrison & Potter of New York, and president of the Carolina, Clinchfield & Ohio. Mr. Potter was born on January 9, 1866, at Kaneville, Ill., and was educated at the high school at Aurora, Ill., and at New York University Law School. For the past 15 years he has been interested in the development of the natural resources of the Appalachian Highlands, embracing mountainous sections of Kentucky, Virginia, Tennessee and North Carolina and in connection with this he became interested in the Carolina, Clinchfield & Ohio, of which he became counsel in 1905. In 1907 he was elected chairman of the board and in February, 1911, he was also elected president. Mr. Potter took an active part in the negotiations for the financing of the standard equipment ordered by the Railroad Administration.

M. W. Potter

The appointment of Mr. Potter, together with the recent appointments of Henry Jones Ford and James Duncan, if confirmed by the Senate, will complete the membership of the commission, which was increased to 11 by the recent transportation law.

Confirmation of the three appointments to the Interstate Commerce Commission was discussed at a meeting of the Senate committee on interstate commerce on Wednesday, but no action was taken and it is strongly rumored around the Capitol that these appointments, together with several others recently made by President Wilson, may be held up for the rest of the present session of Congress, which is expected to adjourn about June 5, which would mean that they would go over until November or December.

# 1919 Rail Production Lowest in Five Years

THE PRODUCTION OF RAILS in the United States in 1919 was the lowest since 1914. According to the statistics issued by the American Iron & Steel Institute the number of gross tons of rails rolled last year was 2,203,843 as compared with 1,945,095 tons for 1914, 2,944,161 for 1917, and 3,636,031 for 1910. The table below shows a comparison of the rail production last year (by processes) with those of a number of years previous. One point of interest to be noted is that while rail production gradually increased during the European war, it fell off suddenly during the period of government control. Another fact of interest in this table is the small rolling of Bessemer rail in 1919, 214,121 tons or 9.71 per cent of the total, as compared with 19.45 per cent of the production in 1918.

PRODUCTION OF RAILS BY PROCESSES, IN GROSS TONS

| Years | Open-hearth | Bessemer | Rerolled* | Electric | Iron | Total |
|---|---|---|---|---|---|---|
| 1904 | 145,883 | 2,137,957 | ..... | ..... | 871 | 2,284,711 |
| 1905 | 183,264 | 3,192,347 | ..... | ..... | 318 | 3,375,929 |
| 1906 | 186,413 | 3,791,459 | ..... | ..... | 15 | 3,977,887 |
| 1907 | 252,704 | 3,380,025 | ..... | ..... | 925 | 3,633,654 |
| 1908 | 571,791 | 1,349,153 | ..... | ..... | 71 | 1,921,015 |
| 1909 | 1,256,674 | 1,767,171 | ..... | † | ..... | 3,023,845 |
| 1910 | 1,751,359 | 1,884,442 | ..... | † | 230 | 3,636,031 |
| 1911 | 1,676,923 | 1,053,420 | 91,751 | 462 | 234 | 2,822,790 |
| 1912 | 2,105,144 | 1,099,926 | 119,390 | 3,455 | ..... | 3,327,915 |
| 1913 | 2,527,710 | 817,591 | 155,043 | 2,436 | ..... | 3,502,780 |
| 1914 | 1,525,851 | 323,897 | 95,169 | 178 | ..... | 1,945,095 |
| 1915 | 1,775,168 | 326,952 | 102,083 | ..... | ..... | 2,204,203 |
| 1916 | 2,269,600 | 440,092 | 144,826 | ..... | ..... | 2,854,518 |
| 1917 | 2,292,197 | 533,325 | 118,639 | ..... | ..... | 2,944,161 |
| 1918 | 1,945,443 | 494,193 | 101,256 | ..... | ..... | 2,540,892 |
| 1919 | 1,893,250 | 214,121 | 96,422 | 50 | ..... | 2,203,843 |

*Rerolled from old steel rails. Included with Bessemer and open-hearth steel rails from 1904 to 1910 inclusive.
†Small tonnages rolled in 1909 and 1910 but included with Bessemer and open-hearth rails for these years.

The total production of rails as given above includes, in addition to new rails rolled, rails rerolled from defective rails and from old rails. The total of renewed or rerolled rails so included is given in gross tons below.

PRODUCTION OF RENEWED AND REROLLED RAILS, 1911-1919

| Years | Rerolled from new seconds, new defective rails, etc. | | | Rolled from old rails | Total rerolled |
|---|---|---|---|---|---|
| | Openhearth | Bessemer | Total | | |
| 1911 | 2,631 | 19,379 | 22,010 | 91,751 | 113,761 |
| 1912 | 13,140 | 29,446 | 42,586 | 119,390 | 161,976 |
| 1913 | 13,052 | 30,741 | 43,793 | 155,043 | 198,836 |
| 1914 | 13,538 | 13,234 | 26,772 | 95,169 | 121,941 |
| 1915 | 6,477 | 2,652 | 9,129 | 102,083 | 111,212 |
| 1916 | 1,711 | 2,149 | 3,860 | 144,826 | 148,686 |
| 1917 | 1,825 | 7,182 | 9,007 | 118,639 | 127,646 |
| 1918 | 13,296 | 19,462 | 32,758 | 101,256 | 134,014 |
| 1919 | 1,933 | 5,766 | 7,699 | 96,422 | 104,121 |

The next table shows the production of rails by weight per yard which records a further falling off of the production of rail weighing 100 lb. per yard or over. The 1919 rolling was 478,892 tons, whereas the maximum figure obtained in 1916 was 766,851 tons. There was some recovery in the case of rail weighing 85 lb. and less than 100 lb., but the total of 965,571 tons for 1919 is still considerably under the 1,225,341 tons of 1916.

PRODUCTION OF RAILS BY WEIGHT PER YARD, 1902-1919

| Years | Under 45 pounds | 45 and less than 85 | 85 and less than 100 | 100 pounds and over | Total Gross tons |
|---|---|---|---|---|---|
| 1902 | 261,887 | 2,040,884 | 645,162 | | 2,947,933 |
| 1903 | 221,262 | 1,603,088 | 1,168,127 | | 2,992,477 |
| 1904 | 291,883 | 1,320,677 | 672,151 | | 2,284,711 |
| 1905 | 228,252 | 1,601,624 | 1,546,053 | | 3,375,929 |
| 1906 | 284,612 | 1,749,650 | 1,943,625 | | 3,977,887 |
| 1907 | 295,838 | 1,569,985 | 1,767,831 | | 3,633,654 |
| 1908 | 183,869 | 687,632 | 1,049,514 | | 1,921,015 |
| 1909 | 255,726 | 1,024,856 | 1,743,263 | | 3,023,845 |
| 1910 | 260,709 | 1,275,339 | 2,099,983 | | 3,636,031 |
| 1911 | 218,758 | 1,067,696 | 1,536,336 | | 2,822,790 |
| 1912 | 248,672 | 1,118,592 | 1,960,651 | | 3,327,915 |
| 1913 | *270,405 | †967,313 | 2,265,062 | | 3,502,780 |
| 1914 | *238,423 | †309,865 | 868,104 | 528,703 | 1,945,095 |
| 1915 | *254,101 | †518,291 | 742,816 | 688,995 | 2,204,203 |
| 1916 | *295,535 | †566,791 | 1,225,341 | 766,851 | 2,854,518 |
| 1917 | *308,258 | †882,673 | 989,704 | 763,526 | 2,944,161 |
| 1918 | *395,124 | †665,165 | 888,141 | 592,462 | 2,540,892 |
| 1919 | *263,803 | †495,577 | 965,571 | 478,892 | 2,203,843 |

*Includes rails under 50 pounds.
†Includes 50 pounds and less than 85 pounds.

# New York - Philadelphia Motor Truck Service

THE AMERICAN MOTOR FREIGHT CORPORATION, in business a little over two years, now operates 18 five-ton trucks daily, except Sunday, between New York and Philadelphia (about 90 miles) and moves 80 tons of merchandise a day. From a descriptive notice issued by the National Automobile Chamber of Commerce (New York) we take the following notes concerning this corporation's business.

The corporation, capitalized at $10,000, is incorporated under the laws of the state of Pennsylvania. It was organized by two truckmen, who pooled their equipment and interests. Five truckmen now comprise the corporation and hold the entire stock issue. The equipment used by the corporation belongs to the individual stockholders and is under contract with the corporation. Each truckman is paid a flat rate for each round trip. When new equipment is found necessary, each truckman member makes a personal purchase and at present each of three stockholders owns four trucks while two own five each.

The corporation operates but one line—New York to Philadelphia. The trucks do no way business except at Newark. Shipments are collected and delivered by service cars, which act as feeders to the large trucks. Through trucks travel at night via the Lincoln Highway, arriving at the depot in the morning. They are reloaded in the afternoon and that night return to their point of origin. At present the corporation has nine trucks traveling each way each night. Four trucks are held in reserve for repair and emergency work. At 80 tons a day and an average rate of $1.00 per 100 lb. the gross annual revenue is about $250,000.

In a period of less than two years the corporation has been able to reduce its rates 36 per cent while railway express rates have increased 28 per cent. The minimum truck rate is now 80 cents per 100 lb., while the railway express rate is $1.15. The first-class freight rate is 33 cents; adding carting charges, at points of origin and delivery, say 15 cents, would amount to 30 cents, thus bringing the freight cost up to 63 cents.

Merchandise shipped from either terminal depot is delivered to the consignee the following day. Railway express shipments now take at least two days and sometimes a week. Less-than-carlot freight takes a minimum of three days and frequently as long as twenty-one days to cover the same distance. During two recent heavy snowstorms, the trucks were unable to travel for three days; before and since then the service has been uninterrupted.

About fifty per cent of the goods hauled consists of fresh beef, chemicals, cloth and paints. The Victor Talking Machine Company sends all its phonographs and records from Camden, N. J., to New York City by this line. A large paint concern sends all its shipments to Philadelphia by motor truck, finding that instead of using heavy, expensive wooden containers they can use fiber containers, lighter and less expensive. The cost of hauling to and from the railroad at points of origin and delivery, the difference in cost of material and labor between wooden and fiber containers, and the more expeditious service make the trucks the cheaper.

When first organized the corporation found it necessary to employ a number of business solicitors for it had great difficulty in securing enough merchandise for solid loads. Now it has more business than it can handle with its 22 trucks; eight more have been ordered. The corporation's depot in New York measures 8,500 sq. ft. and that in Philadelphia 50,000 sq. ft.

Among the advantages that decide shippers in favor of motor transportation are:

Closed vans, which are locked while the truck is in tran-

sit. Railroad freight cars, while lying in yards awaiting unloading are more or less unguarded. Merchandise consigned to a certain point is placed on a truck bound for that point, so that the shipment cannot be misdirected or sent to a foreign point. A misdirected shipment means a delayed shipment. Perishable merchandise rapidly loses much of its market value; rapid delivery is a very important factor.

## Railroad Employees and Their Compensation for January

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION has compiled a table showing the number of hours and days worked by railroad employees and their compensation for the month of January, 1920, which gives an indication of the wage scale as it stood at the end of federal control, although the figures represent the *earnings* of the employees during the month rather than the *rates* of pay and are, therefore, affected by the conditions that prevailed during that month.

The statement shows a larger number of employees, 1,953,571, than has been shown in any previous compilations issued by the Railroad Administration. For January, 1919, the total was 1,871,035. The volume of traffic was greater this January than last. A previous statement published by the Railroad Administration gave the number for December, 1917, as 1,703,748 and for July, 1919, as 1,894,287. The increase from December, 1917, to January, 1920, therefore, is 249,823.

The number of hours worked and the number of days worked also show increases.

The total payroll for January was $258,290,393. This was for 232,014 miles. This is also larger than has been shown in any previously published statement. The total compensation for December, 1917, was $153,039,988. For

EMPLOYEES AND THEIR COMPENSATION

MONTH OF JANUARY, 1920, COMPARED WITH SAME MONTH OF PREVIOUS YEAR

| | Class of employee | Number of employees | | Hours worked | | Days worked | | Compensation 1920 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | This year | Last year | This year | Last year | This year | Last year | Amount This year | Per hour This year | Per day This year |
| 1 and 2 | General officers | 7,534 | 7,177 | ..... | ..... | 210,417 | 196,687 | $2,707,549 | .... | $12.87 |
| 3 and 4 | Division officers | 12,905 | 12,208 | ..... | ..... | 381,999 | 364,064 | 3,214,476 | .... | 8.41 |
| 5 and 6 | Clerks | 228,164 | 215,885 | 49,217,047 | 48,296,142 | ..... | ..... | 26,818,064 | $0.545 | .... |
| 7 | Messengers and attendants | 10,620 | 9,893 | ..... | ..... | 295,378 | 278,932 | 786,260 | .... | 2.66 |
| 8 | Assistant engineers and draftsmen | 10,024 | 10,817 | ..... | ..... | 267,988 | 291,335 | 1,551,249 | .... | 5.79 |
| 9 | M. W. & S. foremen (excluding Nos. 10 and 26) | 8,048 | 8,043 | ..... | ..... | 222,351 | 231,546 | 1,282,998 | .... | 5.77 |
| 10 | Section foremen | 40,822 | 40,513 | ..... | ..... | 1,155,058 | 1,169,638 | 4,699,419 | .... | 4.07 |
| 11 | General foremen—M. E. department | 1,806 | 1,735 | ..... | ..... | 53,912 | 52,466 | 457,937 | .... | 8.49 |
| 12 | Gang and other foremen—M. E. department | 25,019 | 21,879 | ..... | ..... | 714,726 | 628,140 | 5,042,724 | .... | 7.06 |
| 13 | Machinists | 64,568 | 55,213 | 15,064,548 | 12,732,455 | ..... | ..... | 10,957,147 | .727 | .... |
| 14 | Boiler makers | 20,172 | 17,304 | 4,664,925 | 4,131,705 | ..... | ..... | 3,577,120 | .767 | .... |
| 15 | Blacksmiths | 10,707 | 9,910 | 2,287,786 | 2,071,142 | ..... | ..... | 1,713,294 | .749 | .... |
| 16 | Masons and bricklayers | 1,064 | 1,285 | 1,207,037 | 252,710 | ..... | ..... | 127,573 | 1.057 | .... |
| 17 | Structural iron workers | 564 | 758 | 113,574 | 114,019 | ..... | ..... | 78,120 | .688 | .... |
| 18 | Carpenters | 52,196 | 56,423 | 10,720,783 | 11,961,688 | ..... | ..... | 6,787,378 | .633 | .... |
| 19 | Painters and upholsterers | 12,079 | 11,000 | 2,453,707 | 2,253,240 | ..... | ..... | 1,667,866 | .680 | .... |
| 20 | Electricians | 14,213 | 12,820 | ..... | ..... | 389,915 | 356,467 | 2,300,990 | .... | 5.90 |
| 21 | Air-brakemen | 8,151 | 7,074 | 1,838,944 | 1,600,470 | ..... | ..... | 1,321,686 | .719 | .... |
| 22 | Car inspectors | 25,750 | 24,896 | 6,260,066 | 6,347,785 | ..... | ..... | 4,509,010 | .720 | .... |
| 23 | Car repairers | 89,712 | 82,570 | 18,808,257 | 18,353,187 | ..... | ..... | 13,095,156 | .696 | .... |
| 24 | Other skilled laborers | 58,931 | 57,787 | 13,052,074 | 13,194,075 | ..... | ..... | 9,126,231 | .699 | .... |
| 25 | Mechanics' helpers and apprentices | 128,296 | 109,748 | 28,560,927 | 24,999,820 | ..... | ..... | 14,479,174 | .507 | .... |
| 26 | Section men | 250,003 | 254,306 | 52,807,378 | 57,900,647 | ..... | ..... | 20,007,165 | .379 | .... |
| 27 | Other unskilled laborers | 120,717 | 125,797 | 25,995,728 | 29,841,224 | ..... | ..... | 11,258,807 | .433 | .... |
| 28 | Foremen of construction gangs and work trains | 1,542 | 2,209 | 354,270 | 494,505 | ..... | ..... | 211,595 | .597 | .... |
| 29 | Other men in construction gangs and work trains | 20,138 | 30,987 | 4,632,479 | 6,581,133 | ..... | ..... | 1,899,240 | .410 | .... |
| 30 | Traveling agents and solicitors | 1,269 | 1,181 | ..... | ..... | 34,078 | 32,148 | 226,963 | .... | 6.66 |
| 31 | Employees in outside agencies | 847 | 927 | ..... | ..... | 21,482 | 24,496 | 123,431 | .... | 5.75 |
| 32 | Other traffic employees | 489 | 442 | ..... | ..... | 12,880 | 11,777 | 84,927 | .... | 6.59 |
| 33 | Train despatchers and directors | 5,809 | 5,501 | 1,348,066 | 1,346,879 | ..... | ..... | 1,343,664 | .997 | .... |
| 34 | Telegraphers, telephoners and block operators | 21,550 | 21,638 | 5,135,728 | 5,192,710 | ..... | ..... | 2,903,740 | .565 | .... |
| 35 | Telegraphers and telephoners operating interlockers | 8,015 | 7,880 | 1,918,757 | 1,855,840 | ..... | ..... | 1,120,311 | .584 | .... |
| 36 | Levermen (non-telegraphers) | 3,711 | 4,086 | 890,370 | 997,197 | ..... | ..... | 472,169 | .530 | .... |
| 37 | Telegraphers—clerks | 12,130 | 11,520 | 2,891,537 | 2,825,747 | ..... | ..... | 1,609,623 | .557 | .... |
| 38 | Agent—telegraphers | 19,353 | 19,204 | 4,722,294 | 5,099,312 | ..... | ..... | 2,753,932 | .583 | .... |
| 39 | Station agents (non-telegraphers) | 13,774 | 14,349 | ..... | ..... | 397,418 | 427,634 | 1,999,856 | .... | 5.03 |
| 40 | Station masters and assistants | 656 | 618 | ..... | ..... | 19,579 | 18,415 | 104,866 | .... | 5.36 |
| 41 | Station service employees (except Nos. 5, 6, 37, 38, 39, 40, and 66) | 118,587 | 102,835 | 26,654,250 | 24,895,551 | ..... | ..... | 11,434,144 | .429 | .... |
| 42 | Yardmasters | 4,001 | 4,069 | ..... | ..... | 121,766 | 122,990 | 974,907 | .... | 8.01 |
| 43 | Yardmasters' assistants (not yard clerks) | 3,468 | 3,481 | ..... | ..... | 103,656 | 104,122 | 735,388 | .... | 7.09 |
| 44 | Yard engineers and motormen | 22,093 | 20,137 | 5,671,853 | 4,946,452 | ..... | ..... | 4,325,302 | .763 | .... |
| 45 | Yard firemen and helpers | 22,338 | 20,646 | 5,659,336 | 4,944,829 | ..... | ..... | 3,186,985 | .563 | .... |
| 46 | Yard conductors (or foremen) | 21,663 | 19,891 | 5,444,330 | 4,799,080 | ..... | ..... | 3,764,583 | .691 | .... |
| 47 | Yard brakemen (switchmen or helpers) | 54,209 | 51,803 | 13,045,695 | 11,795,650 | ..... | ..... | 8,455,391 | .648 | .... |
| 48 | Yard switch tenders | 6,328 | 5,570 | 1,522,916 | 1,519,439 | ..... | ..... | 780,948 | .513 | .... |
| 49 | Other yard employees | 4,974 | 4,789 | 1,215,134 | 1,217,660 | ..... | ..... | 497,918 | .410 | .... |
| 50 | Hostlers | 11,847 | 10,119 | 3,024,521 | 3,215,953 | ..... | ..... | 1,728,821 | .572 | .... |
| 51 | Enginehouse-men | 76,711 | 72,813 | 19,523,093 | 21,931,479 | ..... | ..... | 8,494,047 | .435 | .... |
| 52 | Road freight engineers and motormen | 33,635 | 32,621 | 8,865,881 | 7,906,751 | ..... | ..... | 8,756,161 | .988 | .... |
| 53 | Road freight firemen and helpers | 35,924 | 34,978 | 8,946,416 | 7,986,382 | ..... | ..... | 6,490,723 | .726 | .... |
| 54 | Road freight conductors | 27,736 | 25,720 | 7,578,646 | 6,636,551 | ..... | ..... | 6,157,946 | .813 | .... |
| 55 | Road freight brakemen and flagmen | 67,737 | 63,888 | 18,023,540 | 15,967,390 | ..... | ..... | 11,285,071 | .626 | .... |
| 56 | Road passenger engineers and motormen | 12,651 | 11,943 | 2,785,793 | 2,695,654 | ..... | ..... | 3,298,216 | 1.184 | .... |
| 57 | Road passenger firemen and helpers | 12,335 | 11,725 | 2,671,047 | 2,601,296 | ..... | ..... | 2,345,032 | .878 | .... |
| 58 | Road passenger conductors | 10,516 | 10,031 | 2,463,415 | 2,329,838 | ..... | ..... | 2,392,411 | .971 | .... |
| 59 | Road passenger baggagemen | 5,522 | 5,213 | 1,330,108 | 1,270,023 | ..... | ..... | 902,931 | .679 | .... |
| 60 | Road passenger brakemen and flagmen | 15,354 | 14,219 | 3,475,861 | 3,245,673 | ..... | ..... | 2,323,307 | .668 | .... |
| 61 | Other road train employees | 3,691 | 3,470 | 862,001 | 831,211 | ..... | ..... | 464,326 | .539 | .... |
| 62 | Crossing flagmen and gatemen | 22,741 | 21,692 | ..... | ..... | 677,942 | 675,548 | 1,791,671 | .... | 2.64 |
| 63 | Drawbridge operators | 1,550 | 1,516 | ..... | ..... | 46,010 | 45,825 | 150,898 | .... | 3.28 |
| 64 | Floating equipment employees | 9,324 | 7,860 | 2,450,297 | 2,241,233 | ..... | ..... | 1,374,774 | .561 | .... |
| 65 | Express service employees | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .... | .... |
| 66 | Policemen and watchmen | 11,771 | 10,855 | ..... | ..... | 357,649 | 330,165 | 1,424,804 | .... | 3.98 |
| 67 | Other transportation employees | 5,833 | 5,449 | ..... | ..... | 164,752 | 162,000 | 637,735 | .... | 3.87 |
| 68 | All other employees | 19,684 | 18,119 | ..... | ..... | 561,012 | 532,977 | 1,694,243 | .... | 3.02 |
| 69 | Totals | 1,953,571 | 1,871,035 | 396,160,415 | 391,421,727 | 6,209,968 | 6,057,372 | 258,290,393 | .571 | 5.15 |

Count of employees taken as of January 16, 1920, and January 16, 1919, in accordance with I. C. C. rules.

Average per day and per hour shown opposite Class 69, "Totals," are for those classes only whose time is reported by days and by hours, respectively.

Back pay and hours or days relating to back pay eliminated from January, 1920, figures.

January, 1919, it was $230,140,935, and for July, 1919, it was $226,140,935.

The average compensation per hour for employees whose time is reported on an hourly basis, in January, 1920, was $.571 and the average compensation per day for those reported on a daily basis was $5.15. For December, 1917, the average hourly compensation was $.342 and for July, 1919, it was $.532. For December, 1917, the average daily compensation was $3.52, and for the month of July, 1919, it was $4.93.

Dividing the total compensation paid by the number of employees gives an average monthly compensation of $132.25, which compares with $119.38 for July, 1919, $89.83 for December, 1917, and $83.64 for the calendar year 1917.

## Increase in Rates on French Railroads

### By Francis Jaques

PARIS, FRANCE.

ON FEBRUARY 23, new rates were put into effect on all French railroads, increasing the old tariffs by a large margin. This radical measure was not adopted without serious and mature consideration, and only after long discussions in the Chamber of Deputies and Senate, during which numerous amendments to the law proposed by the new Minister of Public Works, M. Le Trocque, were voted down.

### Passenger Fares

For the passenger traffic, the increase in fares amounts to 45 per cent on third-class, 50 per cent on second-class, and 55 per cent on first-class tickets. This increase in fares is added, however, by taking as a basis for the calculation the old tariffs before the 25 per cent tax, put into effect on April 15, 1918, to replace the former tax of 12 per cent, and before the increase of 25 per cent made in the rates in March, 1918. To obtain the new price of a ticket today the following method is employed:

1. The 25 per cent tax is deducted from the existing price of a ticket.
2. The 25 per cent increase is then deducted from the sum thus obtained.
3. According to the class, 45, 50 or 55 per cent of the resulting sum is then added to the existing price of the ticket.

A concrete example will explain very clearly this calculation, which at first reading may appear somewhat complicated. Take a second-class ticket, for instance, costing 1 franc on February 22. First the 25 per cent tax is deducted, leaving 80 centimes. Secondly, the previous increase of 25 per cent is deducted from this sum, leaving 64 centimes. Thirdly, 50 per cent of the 64 centimes, being the percentage for second-class tickets, is added to 1 franc, the price of the ticket of February 22. We thus obtain 32 centimes plus 1 franc, making 1.32 francs, the new cost of the ticket.

On certain suburban lines of the State and Est Railroads, where there are only first and second-class cars, the 50 per cent increase provided for second-class tickets is applied to first-class, and the 45 per cent increase, usually used for third-class, is applied to second-class tickets.

In order to avoid the complicated calculations which would be necessary to determine the new price of tickets by carrying out the provisions of the law as above indicated, the railroads have adopted coefficients to be used which give the new prices much more rapidly and sufficiently accurately. The figures employed for these coefficients are the following: 1.288 for third-class tickets, 1.32 for second-class tickets, and 1.352 for first-class tickets.

The increase in rates on return trip tickets is calculated in exactly the same way, employing the same coefficients.

*Exceptions to the Increase of Rates.*—In putting into effect the new tariffs, it was found necessary to make certain exceptions. For instance, people who held season tickets on February 22 were allowed to use them until their time was up, even in cases where the payments are made on the instalment plan and have not been entirely completed.

Commercial travelers will also escape the new tax. The companies are going to give certain privileges to working people living in the suburbs of all the big cities, who earn less than 6,000 francs a year, or less than 8,000 where they have a family to support, and paying an annual rental less than 1,000 francs in the first case and 1,600 francs in the second case.

### Freight Rates

All freight rates were also increased on February 23. The tariffs were revised by an amount equal to 115 per cent of the old rates before the 25 per cent increase was put into effect on April 15, 1918, and the 10 per cent tax, applied to most freight shipments, or the 5 per cent tax placed on certain shipments such as foodstuffs. The 25 per cent increase and these taxes are kept. The following example will explain how the new rate is obtained.

On February 22, before the new increase, the method employed for fixing the cost of a shipment which, let us say, cost 100 francs previous to the 25 per cent increase of April 15, 1918, and the addition of the 10 per cent or 5 per cent tax, was this: To 100 francs was added 25 francs (the tax), plus 12.50 francs (10 per cent) or 6.25 francs (5 per cent), making a total of 137.50 francs in the first case, and of 131.25 francs in the second case.

Since February 23, the new rate is obtained by adding 115 per cent to the 100 francs, plus 25 francs (the tax) plus 12.50 francs (10 per cent) or 6.25 francs (5 per cent).

In the first case the new increased rate obtained is 252.50 francs, instead of 137.50 francs, as on February 22, and 246.24 francs, instead of 131.25 francs in the second case.

As with the passenger fares, in order to avoid these complicated calculations, the companies have adopted coefficients for figuring the new tariffs more readily and sufficiently exactly. In the case of shipments which pay the 10 per cent tax above-mentioned, the figure used is 1.83, and with those paying the 5 per cent tax 1.87 is employed. If we take the example, cited above, of a shipment costing 137.50 francs on February 22, and multiply that sum by the coefficient 1.83, we obtain 251.625 francs, which is considered sufficiently near the figure 252.50 francs found the other way. In the case of the shipment previously costing 131.25 francs, we obtain 245.4375 francs by using the coefficient 1.87 instead of 246.25 francs found by the other method. In spite of the slight difference in the figures obtained by using the coefficients, this system has been adopted on account of its simplicity.

### Absolute Necessity for the Increase

The above description shows the very large increase in all rates put into effect on the French railroads on February 23. These new tariffs were not adopted without a great deal of opposition on the part of all sorts and kinds of shippers who claimed that the increase would have a disastrous effect on commerce and tend to increase the high cost of living. The most competent authorities, however, saw no other way of helping the railroads to solve their financial difficulties and organize their future. This can be readily understood, for it is estimated that the railroads have a total deficit of 3,703,000,000 francs accumulated since the beginning of the war. This tremendous increase in rates was therefore voted by the chamber of deputies and the senate, and it is now in effect.

# General News Department

**The Western Railway Club** will hold its annual meeting and election of officers on May 17, at the Hotel Sherman, Chicago.

**President Wilson** on May 8 signed the urgent deficiency bill carrying the appropriation of $300,000,000 for the Railroad Administration.

**The American Association of Engineers** held its sixth annual convention at St. Louis, Mo., on May 10 and 11. Group meetings for engineers in various services were held.

**One hundred prisoners** of the Maryland State Penitentiary have been engaged to do track work on the Baltimore & Ohio, at Jefferson, Md. The convicts are to be paid $3.95 a day, working ten hours.

**Six passengers** and three employees were killed and three employees and 35 or more passengers were injured in a butting collision of two multiple-unit electric trains on the Portland division of the Southern Pacific near Bertha, Ore., on May 9. It is understood that the collision was due to the failure of the eastbound train, No. 124, to wait at Bertha for the westbound train, No. 107.

**Protection of Forests from Fires** was the subject of a conference at Harrisburg, on May 4 between the governor of Pennsylvania, the Chief of the Department of Forestry, Gifford Pinchot, and about 40 railroad representatives. In a number of especially dangerous locations the railroads agreed to burn a strip 100 ft. wide along their rights of way, the officers of the state making the necessary arrangements with the owners of the land.

**The Southern Railway** has issued a circular inviting ambitious young Southern men to join the "apprentice squad" in the railway company's Freight Traffic Department at Atlanta, Ga. The squad is composed of 10 young men and as fast as members are promoted there are vacancies for beginners. Applications from high school graduates will be considered. At the start the pay is $60 a month. After six months' service the pay of those whose progress has been satisfactory will be advanced to $75.

**The Board** of Railroad Wages and Working Conditions of the United States Railroad Administration was discontinued on April 1. The board since the termination of federal control on March 1, has been engaged solely in completing the tabulation of data relating to railroad wages and working conditions, the collection of which was begun during the period of federal control, and in recommending necessary interpretations involving readjustments chargeable to the director general of railroads for some portion of the period of federal control under the wage orders issued during federal control. This work has now been completed, insofar as the board is concerned. In accordance with Section 311 (c) of the transportation act, all books, papers and documents of the Board of Railroad Wages and Working Conditions will be transferred to the Labor Board created by the transportation act.

**The Sectional committee on Steel Shapes** composed of representatives from the American Society of Civil Engineers, the Association of American Steel Manufacturers and other allied organizations, have finished a preliminary report to be used in securing an international standard for rolled steel shapes as used in structures, bridges, railway cars and ships, etc. This is the result of a movement started in 1919 by the British Engineering Standards Association, who undertook to revise their standards and to secure the co-operation of the American Engineering Standards Committee in the possible adoption of Anglo-American standards. Under the auspices of the American body the following organizations were requested to confer on the proposed standardizations: The United States Navy, the Association of American Steel Manufacturers, the American Bureau of Shipping, the American Society of Civil Engineers, the American Railroad Association, the Society of Naval Architects and Marine Engineers, and the Railway Car Manufacturers' Association. As this is a very important subject the committee is desirous of obtaining a full and free discussion by anyone interested.

Dr. P. G. Agnew is secretary of the American Engineering Standards Committee with offices at 29 West Thirty-ninth street, New York.

**A. F. Duffy,** manager of the Safety Section of the United States Railroad Administration has issued his farewell address—Bulletin No. 14—giving the records made up by his department for the months of January and February, the last two under government operation. There has been an increase in the number of casualties reported by the railroads which were under federal control, and Mr. Duffy attributes this to the fact that, beginning about Christmas, the safety work throughout the country began to slacken, owing to the near approach of the dissolution of federal control. For the two months the number of employees killed was 422, as compared with 404 in the same period of 1919; and of injured 22,215 as compared with 20,100. The bulletin gives the usual data concerning casualties to other persons, attendance at meetings, etc. In the two months 3,386 safety meetings were held with an aggregate attendance of 51,619. Of the 122 safety rallies held, 100 were in the Allegheny Region. The number of men talked to by safety committee men in the two months was 201,894, besides large numbers addressed in meetings. Mr. Duffy tells the safety agents of his warm appreciation of the "fine manner in which you have supported the great cause for which we have been laboring."

## Grain Men Complain

Representatives of the grain trade, at a conference with Julius H. Barnes, United States wheat director at Chicago on May 7, stated that because of a shortage of grain cars, together with the strikes and bad weather which have seriously interfered with transportation, wheat is now in a critical plight, on the eve of the expiration of the Wheat Guarantee Act on June 1. The conference was held to take steps to establish a free and open market for the handling of wheat and grain products after the expiration of federal control on June 1. The grain men said that a large part of the old crop is still on farms, that country and terminal elevators are filled, that bank credits for handling the old crop are being stretched far beyond the usual season and that room will soon be needed in elevators for the new wheat crop. No definite recommendations were made.

## Immigration and the Labor Problem

In an editorial on the above subject appearing on page 1333 of our issue of May 7 were two typographical errors concerning the number of immigrants and also the number of emigrants leaving the country during the six months after the armistice. The statements should have read, "for the four years ending 1918, 200,000 less," and "over 100,000 emigrants left the country during the six months * * *."

## Applications for Government Orders to Extend Railroad Facilities

The Public Utilities Commission of Idaho has applied to the Interstate Commerce Commission for an order requiring the

Northern Pacific, the Oregon-Washington Railroad & Navigation Company and the Camas Prairie Railroad to provide a north and south railroad for the state by the extension of the Camas Prairie to New Meadows, where it would connect with the Pacific & Idaho Northern. The application is filed under the provision of the transportation act which authorizes the commission to require a carrier to extend its lines or increase its facilities. The Natchez (Miss.) Chamber of Commerce has asked for an order requiring the Louisiana & Arkansas to bring its trains across the Mississippi river from Vidalia, La., into Natchez over a ferry.

## British Locomotives for Belgian Railways

Modern Transport says that the Belgian Government's order for 200 locomotives recently placed in England, goes to Sir W. G. Armstrong, Whitworth & Co., Limited, of Newcastle-upon-Tyne. These locomotives are to be built to designs prepared by the Belgian State Railways Administration type No. 33. The eight coupled wheels will be 4 ft. 11¾ in. in diameter and the truck wheels 2 ft. 11½ in. The cylinders will be 24 in. by 28 in., and Walschaerts valve gear will be used. Working steam pressure will be 200 lb. per sq. in., and the grate area 34.87 sq. ft. Twenty-five of these locomotives will be fitted with the Robinson superheater. The tender, 6-wheel, will carry 5,275 gallons of water and about seven tons of coal. The automatic and direct Westinghouse brake will be fitted to both engine and tender. The tractive force will be 46,000 lb., and the ratio of tractive force to adhesion will be 3.45. In running order the engines will each weigh 80 tons 4 cwt. Weight of engine and tender, 133 tons.

## Material-Handling Committee—Work Englarged

The Board of Governors of the Material Handling Machinery Manufacturers' Association, 110 West Fortieth street, New York, has appointed 12 special committees. These committees will devote their time to the work of securing better co-operation on the part of the material handling industry and by such efforts to aid in increasing the average production per man with a resultant reduction in the price of commodities. The material handling industry has been divided into six representative divisions as follows: (1) cranes, hoists and winches; (2) gravity and power conveyors; (3) elevators; (4) industrial trucks; (5) bulk handling machinery, and (6) miscellaneous equipment. The 12 committees and their chairmen are as follows:

Membership Committee: E. Logan Hill (Heyl & Patterson, Inc., New York), chairman. Engineering Committee: F. W. Hall (Sprague Electric Works, New York), chairman. Main committee to be made up of the chairman and one additional member of each of the six sub-committees representing the respective six divisions of the industry. Finance Committee: Lucian C. Brown (Elwell-Parker Electric Company, New York), chairman. Meetings Committee: Charles A. Rohr (General Electric Company, New York), chairman. Committee to Co-Operate with Technical Societies: James A. Shepard (Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.), chairman. Committee to Co-Operate with Trade Associations and Industries: J. H. Flynn (Blaw-Knox Company, Pittsburgh, Pa.), chairman. Committee to Co-Operate with Marine Terminal Commissions: C. A. Luster (Clyde Iron Works, Duluth, Minn.), chairman. Committee to Co-Operate with Railroads and Railroad Commissions: Francis L. Stuart (International Conveyor Company, New York), chairman. Committee to Co-Operate with Civic Associations and Governmental Bodies: F. S. Chavannes (Chesapeake Iron Works, Baltimore, Md.), chairman. Special Crane Committee: W. B. Clarke (Manning, Maxwell & Moore, Inc., New York), chairman. Committee on Standardized Containers: Calvin Tomkins (New York), chairman. Publicity Committee, Advertising Council: A. J. Barnes (Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.), chairman.

The committee to co-operate with railroads and railroad commissions consists of Francis L. Stuart, F. B. Fink, I. L. Bretzfelder, B. F. Fitch, F. Logan Hill, F. R. Fishback, Justin Griess, Benjamin Dixon, M. Oliver Crosby and G. A. Mitchell.

The committee on standardized containers consists of Calvin Tomkins, B. F. Fitch, F. W. Hall, F. Stadelman, D. Rushmore, F. L. DuBosque and R. W. Scott.

## American Society for Testing Materials

This society will hold its twenty-third annual meeting at Asbury Park, N. J., on June 22 to 25 inclusive, with headquarters at the New Monterey hotel. The first session will be held at 10 a. m., Tuesday, June 22. Papers and reports will be presented at the various sessions in accordance with the following general outline:

Tuesday morning.....Non-Ferrous Metals.
Tuesday afternoon.....Wrought and Malleable Iron and Corrosion.
Tuesday evening.....Presidential address and reports of administrative committees.
Wednesday morning....Steel.
Wednesday afternoon...Committee meetings.
Wednesday evening.....Testing Apparatus.
Thursday morning.....Preservative Coatings and Lubricants.
Thursday afternoon.....Miscellaneous Committee Reports and Papers
Thursday evening.....Ceramics.
Friday morning.....Road, Materials, Lime and Gypsum.
Friday afternoon.....Golf tournament.
Friday evening.....Cement and Concrete.

J. E. Howard will present on Wednesday morning a paper on "The Shattered Zones in Certain Steel Rails, with Notes on the Interior Origin of Transverse Fissures." The report of the Committee on Preservative Coatings for Structural Materials will be presented on Thursday morning.

## Supervising Officers in Maintenance Work

At a meeting of the New England Railroad Club held in Boston on May 11, W. J. Backes, engineer of maintenance of way, of the New York, New Haven & Hartford, presented a paper on the "Responsibilities of Supervising Officers in the Maintenance of Way Department." In his paper, Mr. Backes brought out the many difficulties with which the maintenance of way department has had to contend in the past and the increasing complexity of its duties in the future.

Better co-operation was urged not only all along the line down to and including the foreman, but between the various departments of the railways. In the discussion which followed it was brought out that the railroads at present are virtually running a training school for the benefit of the electric railways and other industries who can and do pay higher wages.

F. S. Austin, general storekeeper of the Boston & Albany, was elected a member of the executive committee, and F. J. Carty, mechanical engineer of the same road, was elected member of the membership committee, in place of L. G. Morphy, who recently resigned his position on the Boston & Albany to go to South America.

## Signal Division—A. R. A.

H. S. Balliet, secretary of the American Railroad Association, Signal Division, 75 Church street, New York City, has issued the announcement of the annual meeting of the Division, which is to be held at Alexandria Bay, N. Y., on Wednesday, Thursday and Friday, July 14, 15 and 16. Reports of committees will be mailed to members of the Division about June 25.

Headquarters will be at the Thousand Island House, and the rates at the hotel, American plan, are for room and bath $7 a day, and room without bath $6. Requests for hotel reservations should be sent to the secretary, who on June 15 will assign rooms in the order in which the requests are received. The secretary will also make sleeping car reservations on trains of the New York Central either from New York or from Chicago, provided members make their wants known to him by July 1.

The round trip fare from New York City to Redwood, N. Y., the nearest railroad station, is $19.80; from Chicago, by rail to Lewiston, N. Y., and thence by steamer via Toronto, $48.76. The steamer leaves Toronto at 3.30 p. m. and reaches Alexandria Bay the next morning.

# REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1920

| Name of road. | Average mileage operated during period. | Operating revenues: Freight. | Passenger. | Total (Inc. misc.) | Maintenance of: Way and structures. | Equipment. | Operating expenses: Traffic. | Transportation. | General. | Total. | Operating ratio. | Net from railway operation. | Railway tax accruals. | Operating income (or loss). | Increase (or decr.) comp. with last year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lake Superior & Ishpeming | 34 | $5,708 | $252 | $6,489 | $20,080 | $17,150 | $174 | $9,791 | $2,590 | $49,736 | 766.46 | —$43,247 | $3,872 | —$47,118 | —$6,442 |
| Mississippi Central | 164 | 36,215 | 19,307 | 58,956 | 49,862 | 41,236 | 1,522 | 67,506 | 5,952 | 166,178 | 281.86 | —107,221 | 3,900 | —111,171 | —88,268 |
| New Jersey & New York | 47 | 11,629 | 75,231 | 93,254 | 11,883 | 18,467 | 4,343 | 66,428 | 1,983 | 103,099 | 110.55 | —9,845 | 1,928 | —11,774 | —7,946 |
| Northern Alabama | 110 | 101,358 | 13,364 | 116,821 | 26,106 | 5,193 | 1,795 | 55,610 | 1,629 | 90,332 | 67.33 | 26,489 | 3,554 | 22,893 | 13,630 |
| Oregon Short Line | 2,347 | 2,740,769 | 511,779 | 3,497,119 | 206,886 | 528,665 | 21,718 | 1,171,052 | 105,551 | 2,101,345 | 60.08 | 1,395,775 | 217,335 | 1,178,176 | 807,328 |
| Oregon-Washington R.R. & Nav | 2,070 | 1,996,212 | 477,393 | 2,674,545 | 359,311 | 439,130 | 27,424 | 1,169,289 | 101,751 | 2,135,874 | 79.71 | 538,670 | 177,103 | 361,429 | 249,797 |
| Panhandle & Santa Fe | 772 | 374,513 | 127,770 | 535,568 | 108,254 | 239,113 | 3,997 | 280,686 | 15,383 | 647,288 | 120.86 | —111,720 | 20,438 | —132,163 | —2,962 |
| Pennsylvania R.R.—Western Lines | 1,754 | 5,436,317 | 1,440,837 | 7,699,568 | 1,219,969 | 2,986,479 | 87,147 | 4,338,796 | 230,198 | 8,936,207 | 116.06 | —1,236,639 | 344,756 | —1,583,319 | 1,092,028 |
| Pennsylvania R. R.—Eastern Lines | 5,376 | 16,879,305 | 6,601,442 | 26,627,155 | 4,582,223 | 11,511,169 | 232,162 | 16,034,613 | 762,764 | 33,737,771 | 126.70 | —7,110,616 | 908,376 | —8,028,838 | —8,352,236 |
| Peoria & Pekin Union | 19 | 45,110 | 3,353 | 166,666 | 12,399 | 37,570 | 70 | 84,220 | 3,112 | 137,372 | 82.42 | 29,294 | 9,500 | 19,794 | 39,439 |
| Pere Marquette | 2,230 | 1,931,487 | 382,927 | 2,582,769 | 267,514 | 749,726 | 44,290 | 1,568,930 | 77,815 | 2,713,134 | 105.04 | —130,366 | 58,696 | —189,176 | —496,914 |
| Perkiomen | 41 | 82,970 | 8,760 | 95,532 | 7,152 | 4,259 | 13 | 34,748 | 352 | 46,546 | 48.72 | 48,987 | 144 | 48,842 | 12,510 |
| Philadelphia & Reading | 1,126 | 5,241,521 | 805,094 | 6,420,628 | 670,583 | 2,713,146 | 43,308 | 3,472,697 | 144,693 | 7,068,036 | 110.89 | —647,408 | 66,014 | —713,033 | —183,997 |
| Philadelphia, Bethlehem & N. E | 71 | ..... | ..... | 74,486 | 21,366 | 12,155 | 410 | 71,300 | 1,317 | 106,546 | 143.04 | —32,060 | 1,030 | —33,091 | —42,903 |
| Pittsburgh & Lake Erie | 224 | 2,835,619 | 217,340 | 3,253,376 | 431,536 | 1,228,452 | 21,051 | 1,137,758 | 46,244 | 2,868,098 | 88.15 | 385,278 | 75,000 | 310,123 | —33,269 |
| Pittsburgh & West Virginia | 63 | 138,864 | 7,984 | 159,912 | 35,780 | 119,272 | 2,305 | 71,302 | 6,094 | 244,936 | 153.16 | —85,023 | 17,888 | —102,984 | —51,041 |
| Pittsburgh & Shawmut | 103 | 112,750 | 4,219 | 117,847 | 28,679 | 31,499 | 1,873 | 45,466 | 3,504 | 111,057 | 94.23 | 6,791 | 105 | 6,686 | 34,023 |
| Pittsburgh, Concinnati, Chicago & St. L | 2,383 | 5,031,337 | 1,490,492 | 7,410,095 | 926,968 | 3,295,627 | 82,349 | 4,287,188 | 207,597 | 8,875,769 | 119.77 | —1,465,674 | 286,719 | —1,753,077 | 1,641,038 |
| Pittsburgh, Shawmut & Northern | 204 | 108,930 | 6,293 | 117,502 | 17,289 | 47,013 | 2,752 | 61,898 | 5,508 | 134,465 | 114.43 | —16,961 | 1,901 | —18,862 | 22,340 |
| Port Reading | 21 | 122,435 | ..... | 171,172 | 18,164 | 22,292 | 18 | 132,923 | 190 | 173,587 | 101.41 | —2,415 | 2,000 | —415 | —86,192 |
| Quincy, Omaha & Kansas City | 255 | 63,503 | 21,555 | 94,739 | 15,575 | 14,812 | 105 | 62,465 | 2,089 | 95,010 | 100.29 | —271 | 3,647 | —3,918 | —16,208 |
| Richmond, Fred. & Potomac | 81 | 353,209 | 254,959 | 673,634 | 37,913 | 103,593 | 5,181 | 293,195 | 17,216 | 465,460 | 6,909 | 208,174 | 21,705 | 186,464 | —69,788 |
| Rutland | 415 | 167,341 | 88,994 | 313,194 | 68,081 | 97,714 | 6,572 | 225,253 | 11,036 | 410,196 | 130.97 | —97,002 | 17,202 | —114,205 | —49,437 |
| St. Joseph & Grand Island | 258 | 216,171 | 32,944 | 258,559 | 41,305 | 45,305 | 1,995 | 159,792 | 12,880 | 263,086 | 101.75 | —4,526 | 10,914 | —15,444 | 13,596 |
| St. Louis, Brownsville and Mexico | 548 | 242,348 | 168,196 | 430,871 | 145,292 | 154,432 | 5,626 | 202,492 | 21,456 | 526,630 | 122.22 | —95,759 | 9,800 | —105,858 | —205,773 |
| St. Louis Merchants' Bridge Terminal | 9 | ..... | 758 | 332,566 | 58,463 | 50,606 | 650 | 248,292 | 6,039 | 364,048 | 109.46 | —31,482 | 8,250 | —39,732 | —41,078 |
| St. Louis-San Francisco | 4,761 | 5,082,442 | 1,709,768 | 7,200,865 | 1,068,390 | 1,532,733 | 59,459 | 2,982,911 | 202,300 | 5,824,407 | 80.88 | 1,376,458 | 227,951 | 1,146,050 | 356,164 |
| St. Louis Transfer | 6 | ..... | ..... | 116,548 | 10,119 | 14,890 | 158 | 60,381 | 2,099 | 87,648 | 75.20 | 28,900 | 110 | 28,790 | 9,587 |
| St. Louis S. W | 939 | 1,366,999 | 161,644 | 1,562,159 | 206,472 | 403,219 | 24,833 | 313,547 | 36,245 | 988,670 | 63.29 | 573,489 | 42,984 | 530,487 | 478,521 |
| St. Louis S. W. of Texas | 807 | 536,792 | 105,829 | 689,909 | 219,025 | 313,733 | 9,237 | 416,209 | 28,413 | 986,109 | 14,293 | —296,199 | 23,018 | —319,223 | —212,004 |
| San Antonio & Aransas Pass | 736 | 219,194 | 80,874 | 323,877 | 161,726 | 124,566 | 5,622 | 234,819 | 17,035 | 543,490 | 167.81 | —219,613 | 15,000 | —234,613 | —184,607 |
| San Antonio, Uvalde & Gulf | 217 | 65,154 | 61,957 | 132,539 | 60,476 | 25,799 | 1,889 | 61,362 | 3,382 | 152,909 | 115.36 | —20,370 | 2,200 | —22,589 | —5,455 |
| Seaboard Air Line | 3,563 | 2,866,089 | 760,353 | 4,259,559 | 627,324 | 786,434 | 80,383 | 2,048,567 | 108,924 | 3,710,924 | 87.11 | 549,057 | 150,000 | 398,386 | 328,602 |
| South Buffalo | 11 | 34,509 | ..... | 85,413 | 5,677 | 16,275 | 534 | 60,274 | 1,283 | 84,042 | 98.39 | 1,372 | —3,493 | —2,122 | —46,994 |
| Southern | 6,983 | 8,134,045 | 2,393,919 | 11,479,475 | 1,869,046 | 2,102,769 | 162,374 | 5,640,848 | 292,260 | 10,207,392 | 88.92 | 1,272,083 | 387,175 | 881,884 | 511,783 |
| Southern Railway in Mississippi | 278 | 94,742 | 47,622 | 152,627 | 39,130 | 22,418 | 2,609 | 80,086 | 4,168 | 148,411 | 97.23 | 4,216 | 9,800 | —5,601 | —15,290 |
| Southern Pacific | 7,024 | 8,289,874 | 3,566,616 | 13,033,251 | 2,480,945 | 3,106,736 | 113,488 | 5,356,917 | 238,947 | 11,632,114 | 89.24 | 1,401,137 | 661,217 | 734,199 | 13,359 |
| Southern Pacific Steamship Lines | ..... | 473,282 | 16,949 | 516,622 | 12,906 | 857,579 | 12,852 | 681,624 | 23,735 | 1,588,697 | 307.51 | —1,072,074 | 10,035 | —1,082,109 | —909,031 |
| Spokane International | 156 | 101,193 | 14,516 | 119,273 | 14,833 | 10,980 | 2,281 | 38,440 | 5,202 | 71,737 | 60.14 | 47,536 | 5,170 | 42,366 | 32,735 |
| Spokane, Portland & Seattle | 538 | 440,780 | 129,783 | 611,071 | 169,236 | 75,422 | 5,454 | 229,408 | 22,654 | 505,756 | 82.76 | 105,316 | 80,000 | 25,295 | —30,651 |
| Staten Island Rapid Transit | 23 | 48,493 | 67,102 | 126,031 | 40,944 | 44,474 | 1,362 | 114,170 | 9,209 | 210,159 | 166.75 | —84,128 | 15,000 | —99,128 | —103,141 |
| Tenessee Central | 292 | 154,187 | 35,646 | 202,878 | 51,929 | 60,347 | 5,877 | 116,521 | 8,236 | 242,909 | 119.73 | —40,031 | 4,524 | —44,559 | 43,868 |
| Terminal R.R. Assn. of St. Louis | 36 | ..... | 2,055 | 378,782 | 78,560 | 57,301 | 798 | 187,663 | 4,347 | 332,340 | 87.73 | 46,442 | 39,139 | 7,298 | 35,705 |
| Texas & Fort Smith | 87 | 109,975 | 21,435 | 150,808 | 21,822 | 13,932 | 653 | 9,257 | 1,760 | 50,019 | 3,317 | 100.789 | 15,776 | 84,996 | 51,345 |
| Texas & New Orleans | 469 | 506,728 | 152,274 | 729,571 | 150,078 | 187,874 | 4,373 | 320,338 | 17,671 | 717,790 | 98.38 | 11,782 | 21,129 | —10,180 | 56,413 |
| Texas & Pacific | 1,946 | 2,056,026 | 914,271 | 3,171,891 | 648,006 | 726,423 | 34,164 | 1,503,178 | 70,760 | 3,019,748 | 95.20 | 152,143 | 113,300 | 38,155 | 210,255 |
| Toledo & Ohio Central | 435 | 853,806 | 61,493 | 998,399 | 83,524 | 280,431 | 20,037 | 420,243 | 17,280 | 824,525 | 82.58 | 173,874 | 36,220 | 137,659 | 221,091 |
| Toledo, Peoria & Western | 247 | 722.537 | 48,460 | 130,115 | 16,413 | 46,869 | 2,883 | 89,632 | 4,979 | 160,775 | 123.56 | —30,669 | 8,500 | —39,160 | —9,071 |
| Toledo, St. Louis & Western | 454 | 713,776 | 29,380 | 826,827 | 97,092 | 171,258 | 7,141 | 379,103 | 10,338 | 664,931 | 80.41 | 161,896 | 31,000 | 130,896 | 101,237 |
| Trinity & Brazos Valley | 368 | 108,499 | 17,672 | 139,809 | 83,405 | 64,435 | 2,366 | 78,650 | 7,713 | 236,571 | 169.21 | —96,761 | 12,604 | —109,365 | —52,116 |
| Ulster & Delaware | 128 | 27,882 | 13,371 | 64,926 | 18,999 | 20,748 | 1,424 | 57,110 | 4,793 | 103,454 | 159.34 | —38,528 | 5,000 | —43,527 | —18,530 |
| Union R. R. of Pennsylvania | 40 | ..... | ..... | 595,307 | 60,677 | 210,651 | 322 | 407,620 | 8,999 | 688,270 | 115.61 | —92,962 | 8,456 | —101,418 | —124,317 |
| Union Pacific | 3,614 | 6,653,961 | 1,383,557 | 8,822,330 | 993,418 | 1,722,227 | 44,615 | 2,834,240 | 238,663 | 6,045,291 | 68.52 | 2,777,040 | 291,842 | 2,484,599 | 119,248 |
| Utah | 98 | 174,518 | 444 | 175,574 | 7,250 | 30,398 | 200 | 46,914 | 2,486 | 87,248 | 49.69 | 88,326 | 5,066 | 83,259 | 45,559 |
| Vicksburg, Shreveport & Pacific | 171 | 230,036 | 87,750 | 346,754 | 40,835 | 53,590 | 7,363 | 126,043 | 9,438 | 241,041 | 69.51 | 105,713 | 11,311 | 94,367 | 66,468 |
| Virginian | 523 | 744,031 | 50,736 | 891,314 | 125,473 | 229,396 | 4,419 | 487,078 | 17,630 | 864,554 | 96.99 | 26,760 | 45,000 | —18,240 | 191,099 |
| Wabash | 2,472 | 2,963,724 | 687,004 | 4,043,925 | 613,739 | 1,380,671 | 65,214 | 2,156,335 | 125,354 | 4,365,505 | 107.95 | —321,580 | 132,055 | —453,838 | —430,763 |
| Washington Southern | 35 | 139,439 | 114,332 | 309,844 | 32,485 | 44,582 | 2,809 | 136,593 | 8,134 | 228,203 | 73.65 | 81,641 | 6,857 | 74,772 | —54,676 |
| West Jersey & Seashore | 361 | 252,000 | 409.752 | 734,174 | 278,641 | 167,272 | 7,224 | 517,784 | 22,164 | 1,000,122 | 136.22 | —265,949 | 48,992 | —315.037 | 171,749 |
| Western Maryland | 689 | 1,166,728 | 72,706 | 1,322,529 | 329,903 | 745,756 | 86,152 | 536,108 | 42,125 | 1,752,834 | 132.53 | —430,305 | 43,200 | —473,505 | —332,541 |
| Western Pacific | 1,041 | 869,903 | 126,809 | 1,039,260 | 210,603 | 239,853 | 13,481 | 358,676 | 26,736 | 870,289 | 83.74 | 168,971 | 51,939 | 116,897 | 178,405 |
| Western Railway of Alabama | 133 | 138,990 | 63,228 | 220,655 | 30,743 | 53,138 | 6,719 | 84,748 | 6,146 | 185,495 | 84.07 | 35,160 | 6,125 | 29,036 | —669 |
| Wheeling & Lake Erie | 511 | 953,921 | 55,410 | 1,134,611 | 119,559 | 323,838 | 23,184 | 516,195 | 23,554 | 1,009,284 | 88.95 | 125,327 | 65,000 | 60,327 | 233,341 |
| Wichita Falls & N. W | 328 | 196,573 | 51,641 | 261,254 | 51,884 | 25,709 | 2,096 | 117,454 | 7,161 | 204,304 | 78.20 | 56,950 | 11,178 | 45,695 | 65,314 |
| Wichita Valley | 356 | 110,601 | 35,310 | 148,889 | 22,674 | 11,221 | ..... | 67,077 | 1,560 | 102,533 | 68.86 | 46,356 | 5,107 | 41,249 | 42,182 |
| Yazoo & Mississippi Valley | 1,381 | 1,833,237 | 477,648 | 2,421,344 | 460,092 | 531,999 | 27,473 | 928,292 | 53,918 | 2,002,991 | 82.72 | 418,353 | 80,967 | 336,906 | —7,318 |

## REVENUES AND EXPENSES OF RAILWAYS

TWO MONTHS OF CALENDAR 1920

| Name of road. | Average mileage operated during period. | Operating revenues | | | Operating expenses | | | | | | Operating ratio. | Net from railway operation. | Railway tax accruals. | Operating income (or loss). | Increase (or decr.) comp. with last year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maintenance of | | | | | | | | | | |
| | | Freight. | Passenger. | Total (inc. misc.) | Way and structures. | Equipment. | Traffic. | Transportation. | General. | Total. | | | | | |
| Ft. Worth & Rio Grande | 235 | $188,822 | $120,688 | $340,595 | $80,646 | $54,101 | $4,440 | $193,754 | $13,355 | $346,295 | 101.67 | —$5,700 | $7,570 | —$13,287 | $46,478 |
| Galveston, Harrisburgh & San Antonio | 1,381 | 2,666,299 | 881,005 | 3,924,166 | 563,400 | 982,980 | 42,955 | 1,580,021 | 106,232 | 3,316,035 | 84.50 | 608,121 | 122,668 | 482,455 | 23,638 |
| Galveston Wharf | 13 | ..... | ..... | 172,055 | 53,798 | 2,396 | 211 | 78,521 | 3,287 | 166,129 | 96.55 | 5,925 | 24,400 | —18,475 | —31,139 |
| Georgia | 328 | 660,462 | 264,026 | 1,004,297 | 126,920 | 222,275 | 18,645 | 580,191 | 32,886 | 981,332 | 97.71 | 22,965 | 11,900 | 11,059 | —191,042 |
| Georgia & Florida | 405 | 129,582 | 42,531 | 209,524 | 129,372 | 51,240 | 5,631 | 173,328 | 13,337 | 372,909 | 77.98 | —163,385 | 12,000 | —175,406 | —131,976 |
| Georgia Southern & Florida | 402 | 593,162 | 313,719 | 1,048,858 | 153,998 | 230,744 | 16,755 | 458,530 | 24,141 | 892,137 | 85.06 | 156,721 | 35,000 | 120,527 | 37,389 |
| Grand Rapids & Indiana | 569 | 982,055 | 286,306 | 1,536,811 | 150,640 | 370,443 | 21,901 | 788,189 | 45,688 | 1,378,956 | 89.72 | 157,856 | 80,221 | 77,628 | 207,486 |
| Grand Trunk Western | 1,021 | 2,668,376 | 505,240 | 3,756,865 | 413,401 | 1,158,146 | 50,133 | 2,144,986 | 124,070 | 3,905,456 | 103.96 | —148,591 | 105,606 | —254,372 | —416,908 |
| Grand Trunk Lines in New England | 172 | 188,410 | 58,332 | 622,298 | 137,437 | 119,311 | 6,966 | 362,184 | 32,486 | 708,847 | 113.91 | —86,549 | 25,399 | —111,948 | 140,389 |
| Great Northern | 8,176 | 10,535,194 | 2,730,871 | 17,404,752 | 2,895,073 | 3,788,192 | 116,043 | 8,269,670 | 311,773 | 15,626,622 | 89.78 | 1,778,131 | 1,314,905 | 458,962 | —361,106 |
| Green Bay & Western | 252 | 156,552 | 37,426 | 209,113 | 20,120 | 55,691 | 2,267 | 99,288 | 4,557 | 181,917 | 86.99 | 27,196 | 11,534 | 15,662 | —15,497 |
| Gulf & Ship Island | 307 | 314,397 | 85,430 | 465,104 | 128,836 | 111,147 | 12,188 | 194,342 | 18,913 | 466,332 | 100.26 | —1,228 | 25,981 | —27,298 | 4,700 |
| Gulf, Colorado & Santa Fe | 1,937 | 3,003,769 | 971,031 | 4,522,191 | 1,012,738 | 814,621 | 41,121 | 1,827,301 | 113,560 | 3,786,282 | 83.72 | 735,909 | 171,836 | 563,581 | 129,300 |
| Gulf, Mobile & Northern | 468 | 390,558 | 105,018 | 583,351 | 187,565 | 136,032 | 18,931 | 259,224 | 19,835 | 621,585 | 106.55 | —38,234 | 24,723 | —63,397 | —17,077 |
| Hocking Valley | 350 | 1,875,874 | 183,629 | 2,195,639 | 193,616 | 694,033 | 32,252 | 891,809 | 46,075 | 1,857,735 | 84.61 | 337,903 | 138,420 | 199,484 | 792,734 |
| Houston & Texas Central | 866 | 1,298,069 | 425,561 | 1,972,817 | 347,346 | 366,819 | 12,860 | 745,225 | 46,731 | 1,518,666 | 76.95 | 454,151 | 75,370 | 377,878 | 287,489 |
| Houston, East & West Texas | 190 | 315,266 | 92,155 | 457,808 | 84,297 | 79,894 | 3,887 | 214,493 | 11,548 | 394,130 | 86.09 | 63,678 | 15,140 | 47,934 | —20,180 |
| Illinois Central | 4,800 | 16,224,637 | 4,042,522 | 23,349,683 | 3,484,024 | 5,517,732 | 214,663 | 9,226,863 | 460,957 | 19,044,070 | 81.56 | 4,305,622 | 1,011,650 | 3,286,112 | 3,153,236 |
| Indiana Harbor Belt | 126 | ..... | ..... | 1,342,586 | 181,963 | 268,467 | 4,712 | 983,087 | 35,148 | 1,473,378 | 109.74 | —130,791 | 20,203 | —150,997 | —82,446 |
| International & Great Northern | 1,159 | 2,096,454 | 537,031 | 3,045,096 | 666,429 | 742,137 | 30,980 | 1,336,636 | 84,403 | 2,874,321 | 94.39 | 170,776 | 65,003 | 105,206 | 273,283 |
| Kanawha & Michigan | 176 | 582,869 | 92,673 | 722,727 | 99,066 | 264,929 | 6,468 | 286,674 | 24,524 | 681,661 | 94.31 | 41,067 | 50,000 | —8,934 | 192,187 |
| Kansas City, Mexico & Orient | 272 | 215,014 | 35,704 | 281,520 | 99,089 | 99,271 | 6,496 | 154,112 | 16,753 | 375,720 | 133.46 | —94,201 | 15,415 | —109,665 | 45,323 |
| Kansas City, Mexico & Orient of Texas | 465 | 229,765 | 46,015 | 321,270 | 87,774 | 112,994 | 6,527 | 153,842 | 21,118 | 382,255 | 118.98 | —60,986 | 12,669 | —73,980 | 96,077 |
| Kansas City Southern | 774 | 2,194,022 | 461,067 | 3,037,378 | 373,920 | 725,021 | 54,710 | 1,149,188 | 87,430 | 2,388,746 | 78.64 | 648,633 | 109,142 | 538,707 | 384,154 |
| Kansas City Terminal | 27 | ..... | ..... | 244,716 | 40,570 | 76,151 | ..... | 161,056 | 4,471 | 287,899 | 117.64 | —43,184 | 61,621 | —104,805 | —66,549 |
| Lake Erie & Western | 902 | 1,419,062 | 120,660 | 1,705,937 | 155,134 | 517,726 | 35,357 | 781,488 | 46,506 | 1,536,212 | 90 05 | 169,725 | 100,000 | 69,682 | 125,680 |
| Lehigh & Hudson River | 96 | 307,771 | 7,483 | 336,099 | 47,198 | 93,529 | 3,255 | 203,145 | 12,543 | 359,668 | 107.01 | —23,569 | 17,125 | —40,722 | —75,432 |
| Lehigh & New England | 230 | 561,883 | 4,646 | 596,137 | 64,943 | 170,046 | 13,050 | 250,692 | 20,666 | 517,320 | 86.77 | 78,817 | 21,720 | 57,096 | 30,652 |
| Lehigh Valley | 1,435 | 7,938,888 | 945,270 | 9,991,754 | 1,558,896 | 3,442,919 | 78,493 | 6,183,009 | 197,885 | 11,501,199 | 115.10 | —1,509,444 | 352,006 | —1,862,248 | —1,803,460 |
| Long Island | 398 | 885,334 | 1,640,652 | 2,975,258 | 503,764 | 759,828 | 26,061 | 2,220,790 | 103,327 | 3,638,675 | 122.29 | —663,417 | 209,668 | —874,290 | —547,395 |
| Louisiana & Arkansas | 302 | 547,379 | 101,286 | 693,859 | 83,050 | 89,773 | 7,919 | 228,173 | 14,026 | 422,889 | 60.94 | 270,970 | 26,431 | 244,532 | 253,675 |
| Louisiana Railway & Navigation Co | 343 | 543,041 | 77,955 | 650,919 | 159,081 | 114,509 | 8,171 | 257,908 | 19,405 | 559,075 | 85.89 | 91,844 | 28,080 | 63,714 | 134,366 |
| Louisiana Western | 207 | 571,833 | 220,594 | 866,657 | 155,113 | 148,011 | 9,917 | 204,731 | 22,471 | 545,155 | 62.90 | 321,502 | 39,590 | 281,790 | 108,939 |
| Louisville & Nashville | 5,040 | 14,172,344 | 3,844,366 | 20,381,231 | 3,406,097 | 5,127,063 | 415,239 | 8,644,337 | 406,646 | 18,098,090 | 88.79 | 2,283,141 | 500,840 | 1,781,404 | 544,044 |
| Louisville, Henderson & St. Louis | 199 | 328,393 | 114,767 | 498,068 | 83,873 | 66,766 | 9,623 | 193,026 | 16,587 | 369,875 | 74.26 | 128,192 | —13,147 | 141,327 | 63,028 |
| Maine Central | 1,216 | 1,658,395 | 597,996 | 2,628,726 | 602,542 | 768,110 | 20,030 | 1,689,929 | 78,567 | 3,159,282 | 120.18 | —530,556 | 165,483 | —696,184 | —341,879 |
| Maryland, Delaware & Virginia | 82 | 66,925 | 25,094 | 103,927 | 13,376 | 65,960 | 1,260 | 108,084 | 4,494 | 193,173 | 185.87 | —89,245 | 4,000 | —93,246 | 83,725 |
| Michigan Central | 1,862 | 8,722,907 | 2,534,527 | 13,192,992 | 1,208,989 | 2,996,128 | 135,663 | 6,112,091 | 225,970 | 10,882,329 | 82.48 | 2,310,663 | 500,000 | 1,809,140 | —126,660 |
| Midland Valley | 388 | 512,272 | 192,853 | 759,360 | 143,180 | 186,594 | 7,638 | 326,265 | 27,606 | 691,283 | 91.03 | 68,077 | 14,367 | 53,464 | —42,112 |
| Mineral Range | 101 | 97,760 | 484 | 101,386 | 31,837 | 41,390 | 633 | 65,155 | 1,903 | 140,918 | 138.99 | —39,532 | 7,200 | —46,732 | —53,809 |
| Minneapolis & St. Louis | 1,646 | 1,906,270 | 429,610 | 2,651,332 | 246,466 | 662,692 | 26,923 | 1,339,459 | 58,379 | 2,334,525 | 88.05 | 316,806 | 112,500 | 204,103 | 595,726 |
| Minneapolis, St. Paul & Sault Ste. Marie | 4,243 | 4,840,904 | 1,156,040 | 6,973,456 | 971,457 | 1,479,825 | 50,677 | 3,488,000 | 166,820 | 6,185,196 | 88.69 | 788,260 | 574,919 | 213,166 | —332,311 |
| Minnesota & International | 194 | 132,341 | 57,392 | 209,228 | 17,318 | 45,825 | 1,080 | 119,062 | 7,560 | 190,844 | 91.21 | 18,385 | 10,529 | 7,834 | 18,479 |
| Missouri & North Arkansas | 365 | 177,527 | 86,916 | 311,141 | 115,650 | 66,287 | 5,880 | 166,126 | 18,043 | 371,985 | 119.55 | —60,843 | 12,483 | —73,302 | 75,679 |
| Missouri, Kansas & Texas Railroad | 1,714 | 4,121,125 | 1,453,308 | 6,470,226 | 966,728 | 1,812,190 | 64,577 | 2,237,700 | 174,243 | 5,288,622 | 81.73 | 1,181,604 | 217,673 | 962,887 | 873,894 |
| Missouri, Kansas & Texas of Texas | 1,796 | 2,586,780 | 1,526,175 | 4,819,961 | 1,094,608 | 1,038,075 | 58,785 | 3,076,811 | 160,595 | 5,486,364 | 113.82 | —666,402 | 119,041 | —786,952 | —582,302 |
| Missouri, Oklahoma & Gulf | 329 | 310,878 | 42,821 | 376,878 | 110,386 | 155,344 | 3,524 | 232,860 | 18,957 | 521,537 | 138.38 | —144,659 | 27,566 | —172,386 | —29,646 |
| Missouri Pacific | 7,299 | 13,804,714 | 3,194,274 | 19,938,158 | 3,113,047 | 3,985,567 | 189,819 | 7,970,775 | 454,672 | 15,777,766 | 79.13 | 4,160,392 | 504,442 | 3,650,707 | 3,757,093 |
| Mobile & Ohio | 997 | 2,421,529 | 360,007 | 3,135,374 | 520,283 | 880,937 | 61,852 | 1,437,150 | 89,281 | 2,991,337 | 95.41 | 144,036 | 123,000 | 20,728 | 240,193 |
| Monongahela | 108 | 549,767 | 43,840 | 611,534 | 114,287 | 143,611 | 1,601 | 253,269 | 13,470 | 526,239 | 86.05 | 85,295 | 10,000 | 75,295 | —58,940 |
| Monongahela Connecting | 7 | ..... | ..... | 466,990 | 44,485 | 62,021 | 1,090 | 211,971 | 11,695 | 331,263 | 70.93 | 135,728 | 5,604 | 130,124 | 199,118 |
| Montour R. R. | 56 | 153,588 | 2,549 | 158,530 | 33,911 | 69,668 | 2,508 | 64,558 | 13,499 | 185,886 | 117.25 | —27,356 | 4,861 | —32,217 | 50,415 |
| Morgan's Louisiana & Texas | 400 | 1,133,748 | 353,739 | 1,654,190 | 168,999 | 282,619 | 20,993 | 527,276 | 41,886 | 1,046,989 | 63.29 | 607,200 | 73,095 | 533,492 | 431,959 |
| Nashville Chattanooga & St. Louis | 1,247 | 2,601,256 | 873,803 | 4,063,304 | 607,356 | 1,396,920 | 124,840 | 1,617,797 | 91,243 | 3,854,333 | 94.85 | 208,970 | 92,000 | 116,056 | 413,097 |
| Nevada Northern | 168 | 294,338 | 18,012 | 323,398 | 50,869 | 57,246 | 1,701 | 85,945 | 9,263 | 205,319 | 63.47 | 118,079 | 18,535 | 99,544 | 8,562 |
| New Jersey & New York | 47 | 28,333 | 151,403 | 202,252 | 20,761 | 37,292 | 4,586 | 127,913 | 4,371 | 194,917 | 96 37 | 7,336 | 5,728 | 1,604 | 16,260 |
| New Orleans & N. E. | 398 | 1,001,721 | 185,083 | 1,384,018 | 328,229 | 270,273 | 26,667 | 485,172 | 31,704 | 1,051,913 | 76 00 | 332,105 | 68,903 | 262,783 | 321,981 |
| New Orleans Great Northern | 284 | 299,743 | 77,637 | 395,063 | 85,239 | 96,441 | 5,873 | 162,143 | 16,537 | 367,063 | 92 91 | 28,000 | 22,000 | 5,962 | —7,447 |
| New Orleans, Texas & Mexico | 191 | 241,417 | 77,319 | 356,739 | 103,682 | 79,214 | 8,044 | 127,211 | 13,440 | 332,206 | 93.12 | 24,533 | 22,000 | 2,450 | 36,844 |
| New York Central | 6,069 | 29,867,540 | 11,892,343 | 53,921,340 | 5,267,344 | 12,465,066 | 512,999 | 26,979,031 | 1,316,615 | 47,372,978 | 87.85 | 6,548,362 | 2,052,554 | 4,490,124 | 312,176 |
| New York, Chicago & St. Louis | 574 | 3,907,161 | 159,941 | 4,271,592 | 358,295 | 804,971 | 76,030 | 2,128,934 | 122.340 | 3,499,085 | 81 91 | 772,508 | 120,000 | 650,726 | —223,341 |
| New York, New Haven & Hartford | 1,965 | 6,909,067 | 6,821,766 | 17,229,037 | 2,632,325 | 4,215,033 | 92,995 | 9,891,021 | 568,051 | 17,721,937 | 102.86 | —492,900 | 630,000 | —1,127,267 | —234,137 |
| New York, Ontario & Western | 569 | 1,015,327 | 186,395 | 1,508,811 | 273,902 | 399,789 | 16,707 | 952,744 | 45,576 | 1,688,718 | 111.92 | —179,907 | 39,983 | —219,889 | —58,302 |
| New York, Philadelphia & Norfolk | 121 | 880,725 | 170,836 | 1,174,798 | 105,237 | 371,283 | 22,962 | 707,950 | 23,641 | 1,255,196 | 106.84 | —80,398 | 38,902 | —119,392 | —290,102 |
| New York, Susquehanna & Western | 135 | 418,496 | 125,587 | 639,442 | 104,842 | 210,965 | 6,919 | 588,519 | 16,502 | 927,746 | 145.08 | —288,304 | 53,261 | —344,555 | —351,616 |
| Newburgh & South Shore | 7 | ..... | ..... | 248,026 | 25,331 | 58,711 | ..... | 156,656 | 8,422 | 249,121 | 100.44 | —1,094 | 15,293 | —16,387 | —33,231 |
| Norfolk & Western | 2,202 | 10,698,800 | 1,297,052 | 13,072,912 | 1,496,969 | 4,473,306 | 119,772 | 5,361,083 | 226,980 | 11,745,274 | 89.84 | 1,327,639 | 570,000 | 756,394 | —683,388 |
| Norfolk Southern | 906 | 775,883 | 280,931 | 1,206,071 | 205,602 | 257,794 | 22,302 | 577,312 | 43,452 | 1,106,731 | 91.71 | 99,340 | 32,000 | 67,170 | 157,678 |
| Northern Pacific | 6,642 | 12,233,783 | 2,764,282 | 17,573,547 | 1,981,015 | 3,171,031 | 157,328 | 7,163,700 | 372,973 | 13,073,759 | 74.39 | 4,499,788 | 1,332,159 | 3,164,587 | 530,579 |
| Northwestern Pacific | 538 | 553,120 | 329,553 | 1,042,341 | 270,756 | 153,537 | 11,590 | 486,573 | 29,770 | 956,444 | 91.75 | 85,897 | 51,182 | 34,267 | 108,058 |

## Engineering Foundation Seeks Large Endowment

Based on the gifts of Ambrose Swasey, Engineering Foundation has maintained a liaison between engineers since 1915, as represented by the national engineering societies through the National Research Council. Through these means practical mediums have been established for co-operation and technical research to support this work which reacts to the benefit of the entire nation. Engineering Foundation is now seeking to build up this endowment from the $300,000 given by Mr. Swasey to $1,000,000. The Foundation does not plan to build laboratories and to conduct research work directly, but rather to stimulate, co-ordinate and support research work in existing scientific and industrial laboratories, co-operating with the National Research Council. Charles F. Rand, past-president of the United Engineering Society, and of the American Institute of Mining and Metallurgical Engineers, who was elected chairman of Engineering Foundation on March 19, to succeed Dr. W. F. M. Goss, is taking active charge of this campaign. The headquarters of Engineering Foundation are in the Engineering Societies building, 29 West 39th street, New York.

## State Railroad Commission Fines L. R. & N.

The Louisiana Railway & Navigation Company has been fined $1,000 for violation of the terms of the Louisiana Railroad Commission's order requiring the company to "repair and place in a safe and satisfactory condition its entire roadbed including switches, cross ties, rails, bridges, frogs, trestles and any and all portions of said railroad by replacing such defective material as may be necessary, and renewing such parts of bridges and tracks as may appear to be in an unsafe condition," within a period of 120 days. In addition, the Commission has required the payment of $100 a day for each day after March 30, during which the company shall fail or refuse to comply with this order. The original order demanding the repairing of the road was issued on March 25.

In outlining the position of the company, R. E. Milling, general attorney of the Louisiana Railroad & Navigation Company, recently said in part: "About a year ago, the Louisiana Railroad Commission notified the Louisiana Railway & Navigation Company to improve its tracks. Similar notice was also issued to other railroads even though at that time unprecedented rains had prevented in part the maintenance of track in the ordinary way. At the time the Commission's request to improve the track was received, the president of the railroad had already issued instructions to the immediate managers in charge of the property, and while continually hampered by excessive rainfall, the property was improved in all directions.

"Gravel ballast was distributed in larger quantities than ordinary maintenance required. Over 170,000 ties were placed in the last year under the track, which amount is more than double the number ever placed in any one year. Bridges and trestles were repaired and painted, stations were also repaired and painted and several new structures were erected where it was deemed necessary. The motive power was given a general and thorough repair, as well as the coaches and freight cars. This resulted in increased business, both passenger and freight. The extra large amount of work done in the past year can be testified to by many of the best businessmen and planters along the line of the road.

"The statement that the tracks of the company are not in safe condition is not well founded. The Louisiana Railway & Navigation Company has a record second to none in the matter of safety. During 22 years of operation not a passenger was killed, and none of them hurt, unless very slightly, and in 22 years not one trestle collapsed under the traffic, which at times was very heavy. Of course, there have been derailments, but no railroad in operation can eliminate derailments entirely, because derailments are sometimes occasioned by outside interference with tracks.

"Statements in the press, apparently sanctioned by the Railroad Commission of Louisiana, are unjust and unfair. South Louisiana, and especially the Southwestern part, near New Orleans, from August, 1918, to August, 1919, had more than 100 in. of rainfall. It was almost impossible to maintain properly the track, but the Louisiana Railway & Navigation Company performed that service as well as any other road in the same section similarly stiuated, and this publication was issued and a fine imposed without any further notice to the company or giving it an opportunity to be heard."

# Traffic News

The Union Transportation Line, Louisville, Ky., having bought two other motor truck lines, now operates 20 automobile trucks which make regular trips on five lines extending in different directions into the country roundabout. Plans have been made for seven main and 47 secondary routes, taking in 136 towns within a radius of 75 miles of Louisville. From the large central freight depot in Louisville trucks go out, on the principal lines, twice a day.

The Transportation Club of Tulsa, Okla., has elected the following officers: President, L. K. Klein, Gulf Pipe Line Co.; secretary R. V. Miller, Wabash Railway; treasurer, J. M. C. Usher, Price Sand Co.; first vice-president, J. A. Bernier, Kerr Glass Manufacturing Co.; second vice-president, F. W. Dunn, M. K. & T.; third vice-president, J. E. Springer, St. L.-S. F. The directors elected at the same time are: A. C. Holmes, Empire Refineries, Inc.; W. O. Allen, Kerr Glass Manufacturing Co.; T. H. Steffens, Sand Springs Railway.

## Coal Production

The production of soft coal continued to recover slowly during the week ended May 1, according to the weekly bulletin of the Geological Survey, but was still 16 per cent below the average during the first quarter of the year, being estimated at 8,898,000 tons. The cause of the continued depression was the railroad strike, which delayed movements at the most important rail gateways and junction points. For the preceding week the report says the loss of operating time at the mines was 46.8 per cent. The congestion caused by the strike had the double effect of blocking the rails with trains loaded with coal and of delaying the return of empties to the mines.

## P. O. Department Needs More Money for Increased Compensation to Railroads

The Interstate Commerce Commission has denied the petition of the postmaster general and also that of the Western Association of Short Line Railroads for a rehearing and for a revised finding as to fair and reasonable rates for the transportation of the mails. This leaves in effect the commission's decision announced on January 15 ordering increases in the mail pay rates retroactive to November 1, 1916, which will increase the revenues of the roads by over $30,000,000 a year. It also required the postoffice department to ask Congress for a supplemental appropriation in order to pay the railroads. In asking for its appropriation for the next fiscal year the department took no account of the increase, declining to recognize it until after the commission had passed upon its application for a rehearing, but on May 8 the postmaster general asked Congress for an additional appropriation including $8,000,000 for increased payments to the railroads for the transportation of the mails for the four months of the present fiscal year, March 1 to June 30. In his letter of estimate to the Secretary of the Treasury, the postmaster general says:

"The annual rate of expenditure for service on space and weight routes combined on December 31, 1919, was $52,380,047. The annual rate March 31, 1920, at the increased rates was $82,300,973, to which should be added an estimated amount of $3,000,000 to compensate the railroad companies separately for the performance of side, terminal, and transfer service, or a combined rate of $85,300,973. While the annual rate of increase for the four months' period is approximately $11,000,000 it is not believed that more than $8,000,000 additional will be necessary to meet the payments during that period, for the reason that the department, at the suggestion of the United States Railroad Administration, has under consideration the settlement of the increased amounts due the administration during the period of government control by a transfer of funds. Should an additional appropriation be necessary for that purpose, the matter will be presented to you for submission to Congress at the appropriate time."

# Commission and Court News

## Interstate Commerce Commission

The Bureau of Finance of the Interstate Commerce Commission, the newly-created department established to supervise the financial activities now devolving on the commission by the terms of the Transportation Act, will be in charge of W. A. Colston, heretofore general solicitor of the Louisville & Nashville. Mr. Colston took up his duties on May 10.

## State Commissions

The Railroad Commission of Kentucky has been asked by the Louisville & Nashville for authority to discontinue agencies at four places: Hobbs, Withrow, Dants and Greenbrier, all because of the falling off in business due to the discontinuance of distilleries at those places.

The Railroad Commission of Louisiana has denied the application of the Pullman Company for authority to advance rates within that state, the commission being "not convinced from testimony and the exhibits filed, that there is necessity for an advance in the rates on interstate business."

The Newport & Sherman's Valley Railroad has been complained of before the Public Service Commission of Pennsylvania because of the suspension of traffic between Newport, Pa., the eastern terminus of the line (on the Middle Division of the Pennsylvania), and Bloomfield Junction, eight miles west of Newport. The road extends from Newport westward 29 miles to New Germantown, and it is of 3 ft. gage. The road was sold on April 27 to Rodney M. Gring and George H. Ross, and on the 21st the operation of trains east of Bloomfield Junction was suspended. The shortest route by railroad now between this place and Newport is 27 miles long.

The Railroad Commission of Wisconsin has ordered 50,000 handbills printed dealing with the danger at railroad grade crossings. These handbills are to be distributed throughout the state and will be posted by both municipal and steam railroads. In addition 10,000 of the handbills have been printed on cardboard and these will be hung in public garages, hotels and banks and will be attached to every highway map sent out by the State Highway Commission. The handbill is headed "YOU MAY BE THE NEXT." The number of railroad crossing accidents for 1919 is quoted, with the interesting notation, "do you realize that in 1919, out of every 8,400 persons in the state of Wisconsin, one was either killed or injured in a grade crossing accident?" The usual grade crossing signs are illustrated on the handbills with an explanation of the meaning of each.

## Court News

### Lessor Railroad Not Taxable as "Doing Business for Profit" in the State

Dismissing an information by the Attorney General of Massachusettts against the Boston & Albany, the Massachusetts Supreme Court holds that the company is not "doing business for profit," within Mass. St. 1918, c. 255, § 1, imposing a tax on corporations so engaged. The Boston & Albany was organized as a corporation under Mass. St. 1867, c. 276, by the consolidation of the Boston & Worcester and the Western Railroad corporations, and empowered to maintain and operate a railroad, but in 1900 leased its entire property to the New York Central for 99 years, to which the commonwealth consented by St. 1900, c. 468. The court said: "The seizure or purchase of property at the request of the lessee in accordance with the obligations impressed on the lessor by the terms of the lease and the approving statute is necessarily for the benefit of the lessee. Whatever profit there may be accrues wholly to the lessee. Improvement of the railroad property by taking land for increased trackage, the building of freight houses and stations, was for the advantage of the lessee. These acts do not redound in any particular to the profit of the lessor. They do not enable it to receive any additional gain or advantage beyond the rental reserved in the lease. Even as to these powers to exercise eminent domain and to issue bonds, it has no right of initiative. It can act in these matters only at the instance of the lessee. Its conduct is but an automatic reflection of determinations conceived, instituted and carried into final effect by the lessee. The exercise of these attributes by the lessor is the act of a naked repository of corporate power, dormant so far as any possibility of profit to itself is concerned. Under our law a corporation cannot be organized merely for letting a railroad. When a corporation established for the operation of a railroad is permitted by the sovereign power to retire utterly from that business, to become wholly inactive respecting it, and to be simply the quiescent recipient of a fixed income from a single permanent investment, it is difficult to say with due regard to the meaning of words that such a corporation is conducting business for profit." This conclusion is in harmony with several decisions of circuit courts of appeal. Anderson v. Morris & Essex, 216 Fed. 83; N. Y. C. & H. R. v. Gill, 219 Fed. 184; Lewellyn v. P. B. & L. E., 222 Fed. 177; Jasper & Eastern v. Walker, 238 Fed. 553.—Attorney General v. B. & A. (Mass.) 124 N. E. 257.

The Massachusetts Supreme Court also holds that the Ware River Railroad, which before its road was completed leased its entire properties to the Boston & Albany for 999 years from 1874, the road being operated by the lessee up to the time of a lease by the lessee to the New York Central in 1899, and thereafter by the latter, is not taxable under St. 1918, c. 255 § 1, as a Massachusetts corporation doing business for profit.—Attorney General v. Ware River (Mass.), 124 N. E., 289.

## United States Supreme Court

### Injunction Against North Dakota Tax Affirmed

The Supreme Court of the United States has affirmed the order of three judges restraining the enforcement of taxes imposed by an act of North Dakota, approved March 7, 1919, until the further order of the court. The injunction suit was at the instance of the Northern Pacific and other railroads.

The tax purports to be a special excise tax upon doing business in the state. The tax commissioner calculates the value of the total property of each railroad by the total value of its stocks and bonds and assesses the proportion of this value that the main track mileage in North Dakota bears to the main track of the whole line. But on the allegations of the bill for injunction, the Supreme Court holds the circumstances are such as to make that mode of assessment indefensible. North Dakota is a state of plains, very different from the other states, and the cost of the roads there was much less than it was in mountainous regions that the roads had to traverse. The state is mainly agricultural. Its markets are outside its boundaries and most of the distributing centers from which it purchases also are outside. It naturally follows that the great and very valuable terminals of the roads are in other states. So looking only to the physical track, the injustice of assuming value to be evenly distributed according to mileage is plain. But that is not all.

The only reason for allowing a state to look beyond its borders when it taxes the property of foreign corporations is that it may get the true value of the things within the state, when they are part of the organic system of wide extent, that gives them a value above what they otherwise would possess. The possession of bonds secured by mortgage of lands in other states, or of a land grant in another state, or of other property that adds to the riches of the corporation but does not affect the North Dakota part of the road, is no sufficient ground for the increase of the tax—whatever it may be—whether a tax on property, or, as here, an excise upon doing business in the state. St. Louis Southwestern v. Arkansas, 235 U. S., 350, 364. In this case it was alleged that the tax commissioner's valuation included items of the kind described in very large amounts. The foregoing considerations were held to justify the preliminary injunction that was granted against what would appear to be an unwarranted interference with interstate commerce and a taking of property without due process of law. Opinion by Mr. Justice Holmes, Wallace v. Hines, decided May 3, 1920.

# Foreign Railway News

LONDON.

An abstract by the Technical Review from the Zeitung des Verines Deutscher Eisenbahnverwaltungen, states that a standard gage railway, 2½ miles long with an elevation of nearly 1,100 ft., has been constructed to facilitate access to the renowned Thuringian forest. As the bulk of the rise occurs over a short distance where the gradient is 1 in 4, this portion of the line will be operated as a wire rope railway.

LONDON.

An abstract by the Technical Review from the Elektrotechnische Zeitschrift, states that owing to the scarcity of coal, the Arlberg railway is to be electrified, and work has commenced on the section from Landeck to Bludenz and will shortly commence on the section from Innsbruck to Landeck and Bludenz to Bregenz. The Czecho-Slovak government proposes to electrify this year the Sellrainthal railway in Tyrol, and the lines from Hohenems to Herbrog, Ischl to Weissenbach, Scharding to St. Roman, Prague to Brandeis, Harland to Pyhra, Erlach to Wiesmath, Linz to Leonfelden, and Peuerbach to Engelhartzell.

## Exports of Wheels and Axles

The exports of car wheels and axles in the month of March were valued at $789,265. One-third of the whole is represented by shipments to France. The detailed figures, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CARS FROM THE UNITED STATES, MARCH, 1920

| Countries | Value | Countries | Value |
|---|---|---|---|
| France | $256,952 | Chile | $4,795 |
| Italy | 20,398 | Colombia | 1,962 |
| Netherlands | 50 | Ecuador | 204 |
| Spain | 82,785 | Peru | 4,532 |
| England | 2,252 | Uruguay | 12 |
| Canada | 7,413 | Venezuela | 763 |
| Costa Rica | 1,576 | British India | 2,625 |
| Guatemala | 1,436 | Hongkong | 3,720 |
| Honduras | 890 | Japan | 56,613 |
| Nicaragua | 29 | Australia | 528 |
| Mexico | 22,095 | New Zealand | 719 |
| Jamaica | 492 | Philippine Islands | 1,394 |
| Trinidad and Tobago | 175 | British South Africa | 4,116 |
| Other British West Indies | 146 | French Africa | 45,000 |
| Cuba | 78,859 | Egypt | 1,721 |
| Dominican Republic | 2,029 | | |
| Argentina | 2,741 | Total | $789,265 |
| Brazil | 110,243 | | |

## Annual Report on Indian Railways

LONDON.

The Government report on the railways of India for the year ended March 31, 1919, shows gross earnings of the State railways to have been 763,500,000 rupees ($381,750,000), or an increase of $36,700,000 over the preceding year. The percentage of return on capital was 7.07 per cent, as against 6.83 per cent for the previous year. The ton-mileage of coal increased from 9,836,150,000 to 10,114,493,000, and other goods from 11,178,951,000 to 12,026,313,000 ton miles.

The total length of road under construction or sanctioned was 618 miles of 5 ft. 6 in. gage, including 200 miles of State lines worked by the State and 403 miles of State lines worked by companies; 792 miles of meter gage, including 79 miles of State lines worked by companies; 336 miles of 2 ft. 6 in. gage, including 22 miles of State lines worked by the State and 8.43 miles of State lines worked by companies; and 57 miles of 2 ft. gage, none of which was on State lines. The total was 1,803 miles. To help industrial development the government of India has undertaken to purchase in India at least 3,000 wagons (freight cars) annually for ten years, provided that the price is not higher than the price at which wagons can be imported.

The Indian railways endeavored during the war to make minimum demands on Great Britain, but it was necessary in 1918 to ask for 100 locomotives, which were supplied by England, and 5,000 wagons. These wagons eventually were obtained from the United States, being made from materials which had been ordered for the Russian railways.

Designs for standard types of rolling stock were under preparation at the close of the year. Except with the special permission of the government, only British standard rail sections will be used in future for new lines and for extensive renewals.

Experiments on the Great Indian Peninsular Railway indicate that when the proper degrees of pulverization and dryness have been attained, it will be possible to use the lowest grades of Indian coal for fuel on the railways. In the year 1919, the North Western Railway had 112 locomotives burning oil fuel.

Owing to the increasing cost of sleepers, the North Western Railway is preparing a creosoting plant, capable of treating 300,000 sleepers yearly.

## Exports of Locomotives

In the month of March the locomotives exported, as reported by the Bureau of Foreign and Domestic Commerce, Washington, numbered 125, and their total value was $3,672,579. The total value of these exports in February was $4,588,074, and in January $4,159,214. The figures for March are as follows:

EXPORTS OF STEAM LOCOMOTIVES, MARCH, 1920

| Countries | Number | Value |
|---|---|---|
| Denmark | 16 | $619,680 |
| Spain | 10 | 230,000 |
| Canada | 3 | 27,340 |
| Mexico | 7 | 203,500 |
| Jamaica | 1 | 35,590 |
| Trinidad and Tobago | 6 | 98,646 |
| Cuba | 20 | 519,188 |
| French West Indies | 1 | 1,925 |
| Dominican Republic | 2 | 26,024 |
| Bolivia | 1 | 21,410 |
| Brazil | 16 | 521,006 |
| Chile | 3 | 12,904 |
| Colombia | 4 | 113,200 |
| Peru | 1 | 11,550 |
| China | 7 | 56,740 |
| Dutch East Indies | 3 | 161,370 |
| Japan | 7 | 92,925 |
| New Zealand | 1 | 11,450 |
| Philippine Islands | 1 | 13,881 |
| British South Africa | 15 | 894,250 |
| Total | 125 | $3,672,579 |

## Railway Wage Increases in France

The recent report of the Government Railway Commission in France shows that on the French railways the increase in wages of employees since 1914 has been enormous. In July, 1914, an engineman received $637 a year, and by December last this had risen to $1.357, (calculating exchange at the normal rate). A shop employee's annual wages increased in the same period from $213 to $1,112, and among other increases are from $247 to $1.015, and from $342 to $1,015. The whole of this rise is not accounted for by the increase in wages proper, allowances similar in principle to our war bonus making up a considerable proportion of the total. For instance, in the case of the grade whose pay has been raised from $247 to $1,110 a year, in addition to the increase of the minimum rate from $247 to $456, there is an annual allowance of $205 to meet the high cost of living, and special family and other allowances, not granted before the war, totaling another $352 a year. How these increases affect operating expenditure is strikingly shown in the following table of annual wages bills:

| | Wages bill, 1913 | Wages bill, 1919 | Increase |
|---|---|---|---|
| Northern Railway | $27,075,000 | $89,680,000 | $62,605,000 |
| Eastern | 24,700,000 | 76,000,000 | 51,300,000 |
| Paris, Lyons & M. | 33,820,000 | 133,950,000 | 100,130,000 |
| Southern | 7,330,200 | 36,835,110 | 29,504,910 |
| Paris & Orleans | 21,714,150 | 70,902,490 | 49,188,340 |
| State Railways | 31,043,340 | 114,271,510 | 83,227,980 |
| Total | $145,682,690 | $521,639,110 | $375,956,230 |

It should, however, be pointed out that this increase is by no means entirely due to the higher average wage per employee, the growth in the number of persons employed being also a contributory factor. From 1913 to 1919 the staffs of the six railways mentioned above rose from 329,762 to 465,555, an increase of 136,783.

# Equipment and Supplies

## Locomotives

THE LAKE ERIE & NORTHERN is in the market for two 60-ton electric locomotives.

THE ILLINOIS CENTRAL is inquiring for 50 Mikado type locomotives and 25 Pacific type locomotives.

THE PENNSYLVANIA RAILROAD is having 100 locomotives repaired at the shops of the Baltimore Locomotive Works.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of April 9 as being in the market for 15 Mikado and 15 Santa Fé type locomotives, has ordered this equipment from the Baldwin Locomotive Works.

THE MISSABI IRON COMPANY, New York, has ordered 3, six-wheel tank locomotives from the American Locomotive Company. These locomotives will have 21 by 26 in. cylinders, will weigh 157,000 lb. in working order, and will be equipped with superheaters.

THE TEMISKAMING & NORTHERN ONTARIO, reported in the *Railway Age* of April 23 as being in the market for 2, 8-wheel switching locomotives, has ordered these locomotives from the American Locomotive Company. These locomotives will have 23 by 28 in. cylinders, and a total weight in working order of 203,000 lb.

## Freight Cars

THE ILLINOIS CENTRAL is inquiring for 1,000 refrigerator cars and 200 flat cars.

THE OLIVER IRON MINING COMPANY, Duluth, Minn., has ordered 65 dump cars from the Western Wheeled Scraper Company.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of March 26 as being in the market for 500 stock cars, has ordered this equipment from the Western Steel Car Company.

THE INTERNATIONAL RAILWAY SUPPLY COMPANY, New York, has ordered 7 tank cars of 6,000 gal. capacity for the Trinidad Government Railways, from the American Car & Foundry Company.

THE BETHLEHEM STEEL COMPANY, Bethlehem, Pa., reported in the *Railway Age* of April 16 as inquiring for 500 70-ton steel hopper cars, has ordered 1,000 70-ton cars from the Cambria Steel Company.

## Passenger Cars

THE PHILADELPHIA & READING is in the market for 50 cars for passenger train equipment.

THE LAKE ERIE & NORTHERN is in the market for ten 60-ft. interurban passenger cars and one 60-ft. express car.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of March 26 as being in the market for 30 all-steel suburban coaches, is now in the market for 50 steel coaches, 72 ft. 7½ in. long.

THE BALTIMORE & OHIO, reported in the *Railway Age* of May 7 as inquiring for a number of cars for passenger train equipment, is in the market for 60 coaches, 4 dining cars, 20 baggage cars, 10 passenger and baggage cars and 6 baggage and mail cars.

## Machinery and Tools

THE AUTOMATIC STRAIGHT AIR BRAKE COMPANY, New York, is inquiring for Jones & Lamson turret lathes, plain and universal milling machines, cylindrical and rotary surface grinders, engine lathes, speed lathes and shapers.

# Supply Trade News

**H. McL. Harding,** designing terminal engineer, has removed from the Concourse building, 52 Vanderbilt avenue, to 5730 Grand Central Terminal, Forty-second street, New York.

**F. R. Bolles,** formerly vice-president and general manager of the Copper Range Railroad, Houghton, Mich., has been appointed vice-president and general manager of the **American Automatic Connector Company,** Cleveland, Ohio.

**J. G. McNeely,** formerly in charge of the incandescent lamp department of the Western Electric Company, Chicago, with headquarters at Pittsburgh, Pa., has been placed in charge of railroad sales of that company in Pittsburgh, succeeding **Oscar Lepper,** who has been granted a leave of absence on account of ill health.

**William B. Ross,** district manager in charge of sales for Mudge & Co., Chicago, with headquarters at New York City, has been appointed manager of sales of **Edwin S. Woods & Co.,** Chicago. Mr. Ross began his railway career with the Burlington, Cedar Rapids and Northern as a freight house clerk at Cedar Rapids, Iowa. In January, 1891, he was transferred to the auditor's office, where he served in various capacities until June, 1893. From this time until June, 1898, he served as timekeeper and chief clerk to the superintendent, and from July, 1898, to June, 1901, he was utility clerk to the vice-president and general superintendent of the same road. In July, 1901, he was promoted to car accountant, which position he held until that company was absorbed by the Chicago, Rock Island & Pacific. He was transferred to the latter company as a car agent, and in January, 1903, he was appointed statistician to the general manager of the system. In September, 1903, he was appointed transportation clerk to the third vice-president, and subsequently he was employed consecutively as transportation clerk and statistician to the president. In January, 1909, he was appointed chief clerk to the standardization committee. On January 1, 1910, he was elected secretary of the Board of Pensions and later appointed secretary of the Pension and Personal Record Bureau. In July, 1916, he entered the railway supply business as secretary and assistant treasurer of Mudge & Co. In April, 1917, he was elected secretary and treasurer of this company and in May, 1918, he was appointed assistant to the president, with headquarters at Washington, D. C., in which capacity he served until his appointment as district manager.

W. B. Ross

The officers of the **Elvin Mechanical Stoker Company,** 23 West Forty-third street, New York, are as follows: **Frank H. Clark,** president; **John R. Given,** vice-president; **A. G. Elvin,** treasurer; **Frederick P. Whittaker,** secretary; **J. Snowden Bell,** patent attorney, 149 Broadway, New York.

At the fourth annual convention of the American Gear Manufacturers' Association in Detroit, Mich., April 29 to May 1, **F. W. Sinram,** president of the **Van Dorn & Dutton Company,** Cleveland, Ohio, was for the fourth time unanimously re-elected to the presidency of the association.

**J. F. McDonnell**, who for the past nine years has been connected with the Dearborn Chemical Company, has been appointed special railroad representative, packing department, mechanical rubber division of the **United States Rubber Company,** with headquarters at Chicago.

**E. G. Lewis**, manager of the Cleveland, Ohio, office of the **Bucyrus Company,** South Milwaukee, Wis., has been appointed central sales manager of that company, with headquarters in the McCormick building, Chicago, succeeding **E. C. Hingston,** who has resigned. Mr. Lewis will continue to have jurisdiction over the Cleveland office.

**Henry A. Koach,** formerly assistant chairman of the Railway Ticket Protective Bureau, and during the period of federal control inspector in charge of the Secret Service and Police Section of the United States Railroad Administration at Chicago, is now associated with **J. E. White** in the **White Service Company,** Transportation building, Chicago.

**G. E. Ellis**, executive secretary of the Automatic Train Control Committee, has been appointed chief engineer of the foreign department of the **Casale Safety Devices Company, Inc.,** New York City, with office in London, England. Mr. Ellis was born at Fairhaven, Mass., on January 13, 1870, and was educated in civil engineering at Rensselaer Polytechnic Institute, Troy, N. Y. He first entered railway service in 1892, as a signal inspector on the Hudson division of the New York Central & Hudson River. The following year he was transferred to the western division of the same road in the same capacity, and in May, 1894, he returned to the Hudson division. Four years later he was promoted to assistant superintendent of signals of the Mohawk division and at the same time acted as superintendent of the Hudson River Bridge Company. In June, 1900, he was appointed signal engineer of the Standard Signal Company and from September, 1902, to July, 1904, he was western agent of the Pneumatic Signal Company. On the latter date he became assistant chief engineer of the General Railway Signal Company, and in November of the same year he was appointed signal engineer of the Chicago, Rock Island & Pacific. Four years later he left the service of the Rock Island to become manager of installation for the Federal Signal Company and in December, 1909, he became associated with the Hayes Track Appliance Company, Richmond, Ind. In August of the following year he was appointed signal engineer of the Kansas City Terminal, resigning after five years to become senior signal engineer of the Division of Safety of the Interstate Commerce Commission, at Washington, where he remained until he was appointed executive secretary of the Automatic Train Control Committee in January, 1919.

G. E. Ellis

**George A. Price** has been elected treasurer of the **American Arch Company,** 30 Church street, New York. Mr. Price has spent his entire business life in railroad work. He started work on the New York Central & Hudson River in the motive power department, at the DeWitt enginehouse, and from there was transferred to the office of the superintendent of motive power of the New York Central. In August, 1912, he resigned to enter the service of the American Arch Company. On March 1, 1918, he was elected assistant secretary, and he has now been elected treasurer. In addition to being treasurer Mr. Price will also continue his duties as assistant secretary.

**A. G. Shaver,** consulting signal and electrical engineer, with headquarters in Chicago, has recently been appointed chief engineer of the **Casale Safety Devices Company, Inc.,** New York City. Mr. Shaver was educated at Rose Polytechnic Institute, Terre Haute, Ind., and during his summer vacations worked as a trainmen's caller on the Pennsylvania. After graduating he entered the service of that road as a machinists' helper. In 1898, he left the Pennsylvania to become a signal maintainer and batteryman on the Chicago & Eastern Illinois, resigning from the service of that company on April 1, 1901, to become assistant engineer in charge of the signal department of the Union Pacific, with headquarters at Omaha, Neb. On November 1, of the same year, he was given the title of signal engineer, which position he held until April 3, 1906, when he was appointed signal engineer of the Hall Signal Company, now the Hall Switch & Signal Company, Garwood, N. J. After two years with this company he was appointed signal engineer of the Chicago, Rock Island & Pacific. In May, 1914, he resigned to become secretary and treasurer of the Hallet Iron Works, Chicago, and in April of the following year he severed his connection with that company and opened an office as consulting signal and electrical engineer at Chicago. Mr. Shaver intends to continue this work in addition to his new duties.

A. G. Shaver

## Obituary

**Arthur Benedict Bellows,** first vice-president of the **Pittsburgh testing Laboratory,** Pittsburgh, Pa., died on April 17.

**Daniel Cram Noble,** president and treasurer of the **Pittsburgh Spring & Steel Company,** Pittsburgh, Pa., died at his home in that city on May 8, at the age of 75. He was born in Baldwin, Maine, on August 5, 1845 and was educated at Hebron Academy, Maine. For more than 25 years Mr. Noble was identified with branch lines of the Pennsylvania Railroad. He went to Pittsburgh in 1868, and in 1880 became associated with the A. French Spring Company of that city, remaining with that company until 1902, when he founded the Pittsburgh Spring & Steel Company. At the time of his death Mr. Noble was a director of a number of banks and insurance companies of Pittsburgh.

D. C. Noble

**John Wesley Hyatt,** inventor of the Hyatt roller bearing, died on May 10, at his home in Short Hills, N. J., at the age of 83. Mr. Hyatt was not connected with the Hyatt Roller Bearing Company, having sold the patent for this invention about 25 years ago.

# Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This road is completing plans for the construction of a number of buildings at its mechanical terminal at Albuquerque, N. Mex. In addition to the buildings completed before the war, a machine shop, 240 ft. by 600 ft., of steel frame construction; a babbitt shop, 36 ft. by 50 ft.; a flue shop, 46 ft. by 96 ft.; a waste cleaning and paint shop, 24 ft. by 60 ft.; a cab painting and asbestos shop, 30 ft. by 112 ft.; a fire department building, 40 ft. by 60 ft.; a pattern shop, 40 ft. by 70 ft., and a tin shop, 24 ft. by 42 ft., will be constructed. The main buildings are to be principally of reinforced concrete. The addition of these buildings will make this terminal the most complete and modern on the Santa Fe system, and it will be second in size only to the one at Topeka, Kan. F. M. Bisbee, chief engineer of the Western lines, is in charge of the work.

CANADIAN PACIFIC.—Improvements are to be carried out at the Angus shops in Montreal, Que., at a cost of about $1,000,000, as follows: Extensions to the locomotive shops to give an additional floor area of 58,000 sq. ft.; extension to freight shop 106 ft. by 400 ft., extension to pattern shop 50 ft. by 75 ft.; three extension to passenger car shops, one of 102 ft. by 161 ft., another of 137 ft. by 161 ft. and a third 137 ft. by 239 ft.; new car electrical shop 62 ft. by 362 ft.; planing mill shelter 126 ft. by 144 ft.; four new stalls will be added to the dry kiln, increasing the area 7,400 sq. ft.; a new heavy service tapered floor scale will be installed; a number of track changes and additions will be made in the yard, and a mechanical coaling plant, also a new stand pipe will be installed.

LAKE ERIE & NORTHERN.—Improvements and betterments have been authorized to be carried out this year on the Lake Erie & Northern and Grand River Railway subsidiary lines of the Canadian Pacific, operated by electricity. Contracts have already been let for two line revisions, one at Kitchener and the other at Galt, Ont., also for an addition to the repair shop at Preston, Ont., and for two fireproof sub-stations, one at Preston and the other at Brantford.

MOORE HAVEN & CLEWISTON.—It is proposed to build a 13-mile line from Moore Haven, Fla., to Clewiston. C. D. Waring will be the engineer in charge of the location and construction of this new line.

OKLAHOMA SOUTHWESTERN.—This company, announcement of whose incorporation and general construction plans was made in the *Railway Age* of January 30 (page 395) has now completed about 33 per cent of its new line from Bristow, Okla., through Youngstown and Flick to Okmulgee, a distance of approximately 50 miles. The maximum grade on this line is 0.7 per cent and the maximum curvature 6 deg. The structures consist of one 50-ft. girder span and about 2 miles of timber bridging. Contracts for the construction were let to the Allhands & Davis Company, Rogers, Ark., on March 1. The grading averages about 15,000 yd. per mile. In addition to the construction now under way the company contemplates the extension of its line from Okmulgee to a point on the Red River in Jefferson county, a distance of about 200 miles. The line now under construction will connect at Okmulgee with the St. Louis-San Francisco and the Okmulgee Northern.

SOUTHERN RAILWAY.—Construction of a modern double-track steel bridge across the Ohio river at Cincinnati, Ohio, for the Southern Railway System will be begun immediately, a contract for the fabrication and erection of the steel superstructure having been let to the American Bridge Company. The new bridge will take the place of the present single-track structure and will support the heaviest locomotives.

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SEASONAL COAL RATES, as provided for in a bill before the Senate committee on interstate commerce, with specific reductions in cents per ton during the summer months and corresponding increases during the winter months, has been recommended to the committee by Senator Frelinghuysen, chairman of a sub-committee which has been holding hearings on the subject.

# Railway Financial News

CHICAGO & NORTH WESTERN.—Application has been made to the Illinois Public Utilities Commission for permission to issue $15,000,000 1st refunding mortgage bonds.

Application has been made also for authority to purchase and acquire the properties of the Macoupin County Extension and the De Pue, Ladd & Eastern railroads.

GRAND TRUNK.—Dr. J. D. Reid, Canadian minister of railways, recently introduced a bill in the Canadian House of Representatives, providing for the inclusion in the agreement between the government and the company of the names of two small lines, the Vermont & Providence and the Pembroke Southern, which were omitted from the draft approved by the Canadian ministry and subsequently by the Grand Trunk at a special general meeting held in London, Eng., in March, 1920.

LEHIGH VALLEY.—See editorial elsewhere in this issue.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—William A. Read & Co. are offering an issue of $2,500,000 7 per cent equipment trust notes at par. These notes are a direct obligation of the railway company, and are secured by equipment having a value 25 per cent in excess of the amount of the notes. The notes mature in equal instalments of $250,000, beginning June 1, 1921, and ending June 1, 1930.

NORTHERN PACIFIC.—J. P. Morgan & Co., the First National Bank and the National City Company are offering an issue of $4,500,000 one to ten year serial 7 per cent equipment trust certificates.

PACIFIC FRUIT EXPRESS COMPANY.—An offering of $25,000,000 7 per cent equipment trust certificates, maturing in equal instalments from June 1, 1925, to June 1, 1935, and jointly guaranteed by the Union Pacific and Southern Pacific railroads, have been sold by a syndicate headed by Kuhn, Loeb & Co.

WICHITA FALLS, RANGER & FT. WORTH.—See Wichita Falls & Southern.

WICHITA FALLS & SOUTHERN.—This road, operating between Newcastle, Tex., and Wichita Falls, a distance of 56 miles, has recently been taken over by the Wichita Falls, Ranger & Ft. Worth. The acquired line has been operated for several years under lease by the Missouri, Kansas & Texas and will be connected with the Wichita Falls, Ranger & Ft. Worth line now under construction from Dublin, Tex., north through Ranger, Tex., to Newcastle. The announcement of the opening for operation of the latter line between Dublin and Ranger was made in the *Railway Age* of May 7, page 1369.

CHICAGO GREAT WESTERN.—The consolidation of the Wisconsin, Minnesota & Pacific with the Chicago Great Western has been approved by the stockholders. All of the stock of the Wisconsin, Minnesota & Pacific is owned by the Chicago Great Western and the line has been operated for a number of years by the latter company.

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ONE OF THE MOST HEARTENING THINGS about the return of the railroads, shorn as they are under the bill of some functions they previously exercised as a matter of course, is the optimistic spirit in which the carriers' executives are welcoming it and seem disposed to carry out the provisions of the act.—*Newark (N. J.) Evening News.*

A DEPARTMENT OF HEALTH AND RECREATION is the latest novelty on the New York, New Haven & Hartford. B. Thomas Pest, a former physical director for the Young Men's Christian Association, and who was wounded in France, is the director of the new department, with headquarters at New Haven. His business will be to manage the organization of baseball clubs and other athletic activities among the trainmen, shopmen, clerks and other employees of the railroad. It is the purpose to establish athletic leagues on each division and at centers where conditions warrant.

# Railway Officers

## Executive

**Leon Salinas** was elected executive vice-president of the National Railways of Mexico, and empowered with the duties of executive president on April 16.

**Richard O. Fischer**, who served as office manager under the regional director of the Allegheny Region at Philadelphia, Pa., during federal control, has been appointed office manager for the vice-president and general manager of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Chicago, assuming the duties of **F. S. Gibons,** assistant to the general manager, who has left railway service, as noted in the *Railway Age* of April 23 (page 1272).

## Financial, Legal and Accounting

**A. T. Cole,** paymaster on the Houston Belt & Terminal, with headquarters at Houston, Tex., has been appointed acting treasurer of the Gulf Coast Lines, with the same headquarters, succeeding **J. H. Lauderdale,** who has been granted an indefinite leave of absence to become assistant manager of the Material and Supplies Division of the United States Railroad Administration under Max Thelan, Director of Liquidation Claims Division. His headquarters will be at Washington.

**Walter E. Paschall,** who has been elected treasurer of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of February 20 (page 595), served as acting auditor of the Atlanta, Birmingham & Atlantic Railroad Company during the greater part of federal control. Mr. Paschall was born on June 13, 1875, at Brentwood, Tenn. He was educated in public schools and began railroad work in November, 1911, with the road of which he is now treasurer. He was appointed assistant treasurer on March 1, 1913, and served in that capacity until December 31, 1916. From July 1, 1917, until July 1, 1918, he was treasurer of the Cuban Sugar Mills Corporation, with headquarters at Havana, Cuba. He was appointed acting auditor on November 18, 1918.

## Operating

**V. Parvin** has been appointed superintendent of the Ann Arbor, with headquarters at Owosso, Mich., succeeding **A. Syverson**, resigned, effective May 1.

**R. J. McCarthy** has been appointed superintendent of the Saratoga division of the Delaware & Hudson, with headquarters at Albany, N. Y., succeeding **H. F. Burch,** promoted, effective May 4.

**Albert S. Johnson,** assistant general manager of the Terminal Railroad Association of St. Louis, has been promoted to general manager, effective May 10, succeeding **Ira L. Burlingame,** who resigned on May 1.

**J. A. Kaufman,** formerly of the Seaboard Air Line, has been appointed superintendent of the Cumberland & Manchester, effective April 26, and **J. W. McCallister,** foreman, has been promoted to supervisor, effective April 12.

**W. H. Haley,** superintendent of car service on the Missouri Pacific, has been appointed assistant superintendent of transportation, with headquarters at St. Louis, Mo., effective May 1. The position of superintendent of car service has been abolished and Mr. Haley will continue his former duties under the newly created title of assistant superintendent of transportation.

**L. Ennis,** chief despatcher of the Southern, has been appointed trainmaster, having jurisdiction from Sheffield, Ala., to Chattanooga, Tenn., with headquarters at Sheffield, Ala., succeeding **L. Woodall,** promoted. **M. J. Bryan** has been appointed chief despatcher, with the same headquarters, succeeding Mr. Ennis. These appointments became effective May 1.

**William F. Cooper,** who has been appointed superintendent terminals of the Southern, with headquarters at Columbia, S. C., as noted in the *Railway Age* of February 27 (page 656), served as trainmaster from July 26, 1917, until the termination of federal control. Mr. Cooper was born on November 3, 1885, at Salisbury, N. C. He received a high school education, graduating in 1901. His first railroad work began on July 23, 1904, as freight brakeman for the Southern, to which road he has given his entire railroad service. On December 24, 1906, he was promoted to freight conductor and served in that capacity continuously until July 26, 1917, when, as noted above, he was appointed trainmaster of the Charlotte division, with headquarters at Toccoa, Ga. His appointment as superintendent terminals became effective February 15.

W. F. Cooper

**C. E. Urbahns**, superintendent of the Northern district of the Chicago division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Stevens Point, Wis., has been promoted to general superintendent, with headquarters at Minneapolis, Minn., effective May 1. **W. W. Wade**, assistant superintendent of the Southern district of the Chicago division of the Soo line, with headquarters at Chicago, will succeed Mr. Urbahns.

**C. L. Hinkle,** who recently resigned as general superintendent of the Toledo, St. Louis & Western, with headquarters at Frankfort, Ind., has been appointed general manager of the Chicago Great Western in charge of operation and maintenance, with headquarters at Chicago, effective May 1. Mr. Hinkle succeeds **W. L. Park,** who resigned to become a member of the new Railroad Labor Board. Mr. Hinkle entered railway service in 1883, with the Evansville & Terre Haute and was successively operator, station agent and bill clerk until 1888. Later he became associated with the Chicago & Eastern Illinois as a clerk in the mechanical department. He was subsequently promoted to general storekeeper, in which capacity he served from 1891 to 1893, at which time he went to the Ohio Southern as storekeeper and chief clerk in the mechanical department. In 1900 he became chief clerk to the chief engineer on the Detroit, Toledo & Ironton and from 1901 to 1902 he served as a traveling auditor. He became connected with the Toledo, St. Louis & Western the following year, serving as chief clerk to the superintendent. Later he was promoted to chief clerk to the general superintendent and in 1907 he was promoted to chief clerk to the general manager and vice-presi-

C. L. Hinkle

dent in charge of operation and maintenance of that road and the Chicago & Alton. Three years later he was promoted to assistant to the general manager of these roads. In March, 1912, he was appointed superintendent of the Toledo, St. Louis & Western and two years later was promoted to general superintendent, with headquarters at Frankfort. During the war, from February, 1918, to July, 1919, Mr. Hinkle served as a major in the Transportation Corps and while in France was appointed general superintendent of the large depot at Jievres and later to general manager of the depot at Tours. He resumed his former position after his return from service and continued in that capacity until recently.

**Frank E. House,** who has been appointed superintendent of the Cincinnati division of the Erie, with headquarters at Marion, Ohio, as noted in the *Railway Age* of April 16 (page 1223), served as trainmaster of the Susquehanna division during federal control. Mr. House was born in 1880. He received a grammar school education and began railroad work with the Erie on December 27, 1897, as brakeman. From 1903 until 1913 he served as conductor and was then appointed general yardmaster at Avoca, Pa. He was promoted to trainmaster of the Buffalo division on October 1, 1916, which position he retained until transferred to the Susquehanna division at the time mentioned above.

**R. H. McKay,** who has been appointed superintendent in charge of traffic and transportation of the Atlanta, Birmingham & Atlantic, with headquarters at Fitzgerald, Ga., as noted in the *Railway Age* of March 12 (page 800), served as general agent of the same road and others during the greater part of federal control. Mr. McKay was born on December 10, 1884, at Andersonville, Ga. He was educated in public schools and began railroad work in 1900 as clerk for the Central of Georgia. He retained that position until 1902, when he entered the employ of the Commercial Telegraph Company. He became telegraph operator for the Atlanta, Birmingham & Atlantic in September, 1908, and in 1912 was appointed division freight agent at Fitzgerald. He was promoted to general agent, with headquarters at Atlanta, Ga., in June, 1917.

**Ralph Peters, Jr.,** who has been appointed superintendent-passenger of the Long Island, with headquarters at Jamaica, N. Y., as noted in the *Railway Age* of March 5 (page 744), served as assistant superintendent from June 1, 1919, until the termination of federal control. Mr. Peters was born at Cincinnati, Ohio, on May 5, 1887. He graduated from Princeton University with the degree of civil engineer in June 1908, and began railroad work as draftsman in the engineering department of the Long Island the following August. Afterwards he filled such positions as rodman, transitman and assistant engineer. He was then appointed office engineer in the department of construction and maintenance of way. On August 1, 1916, he was transferred to the transportation department for special work. On May 1, 1917, he was appointed assistant trainmaster, with duties involving the operation of various freight terminals in the western territory and on October 1, 1917, he became assistant superintendent in charge of operation of the Bay Ridge division, including the Bay Ridge yards. Shortly afterwards his jurisdiction was extended over the passenger operation in the electrified territory. He was granted a furlough on May 1, 1918, to engage in military service, which included a year with the American Expeditionary Forces as lieutenant in the Transportation Corps. Most of the time he served under Colonel J. A. McCrea, while Colonel McCrea was general manager of transportation service, with headquarters at Tours, and later, while he was Deputy Director General of Transportation, located at the general headquarters of the A. E. F. After he was discharged from military service he resumed the position he held prior to his service.

## Traffic

**H. D. Page** has been appointed general agent of the Chicago, Burlington & Quincy, with headquarters at Peoria, Ill., effective May 1.

**G. F. Ramspacker** has been appointed general agent of the Chicago, Rock Island & Pacific, with headquarters at Pittsburgh, Pa., effective May 5, succeeding **M. T. McCraney,** deceased.

**H. K. Mack** has been appointed division freight agent of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., succeeding **H. D. Skidmore,** assigned to other duties, effective May 1.

**W. C. Esgar** has been appointed superintendent passenger transportation of the New York Central, Lines West of Buffalo, with headquarters at Cleveland, Ohio, effective May 1, succeeding **L. C. Anderson,** promoted.

**George F. Ramspacher,** formerly general agent of the Chicago, Rock Island & Pacific at Philadelphia, Pa., has been appointed general agent in the freight department, with headquarters at Pittsburgh, Pa., succeeding **M. T. McCraney,** deceased.

**John B. Warrington,** who has been appointed manager, through freight and passenger service of the Baltimore & Ohio, the Philadelphia & Reading and the Central of New Jersey, with headquarters at Philadelphia, as noted in the *Railway Age* of March 12 (page 799), served as terminal manager of the Washington Terminal for the Railroad Administration during the greater part of federal control. Mr. Warrington was born on April 21, 1866, at Hummelstown, Pa. He began railroad work in 1876 as car cleaner for the Philadelphia & Reading at Port Clinton, Pa. Later he became yard brakeman; then brakeman, and afterwards conductor. Within a short time after being transferred to the trainmaster's office at Reading, Pa., as assistant train despatcher, he was promoted to train despatcher, in which capacity he served until 1888, when he was appointed yardmaster at Harrisburg, Pa. He was transferred as yardmaster to West Falls, Pa., in 1895, and on November 7, 1899, he was appointed assistant trainmaster of the Philadelphia division of the Philadelphia & Reading, at Philadelphia. On March 19, 1902, he was promoted to superintendent of the same division. He went to the roads of which he is now manager, through freight and passenger service, on May 15, 1918, as general superintendent interline freight transportation. The following June 17 he accepted the position of manager of the Washington terminal, as referred to above.

J. B. Warrington

**Walter H. Dominick,** who has been appointed assistant general passenger agent of the Delaware, Lackawanna & Western, with headquarters at New York, as noted in the *Railway Age* of April 9 (page 1176), served as secretary of the Joint Committee on Consolidated Ticket Offices, eastern territory of the United States Railroad Administration from January 1, 1919, until the termination of federal control. Mr. Dominick was born on March 23, 1892, at New York. He graduated from the Stuyvesant High School and the Albany Business College. His first railroad work began on May 12, 1910, as rate clerk in the passenger department of the Delaware, Lackawanna & Western. He served in that capacity until 1914, when he was promoted to chief rate clerk. He was transferred as chief clerk to the dining car department in 1918. He was then appointed secretary, as mentioned above.

## Mechanical

**W. Wright** has been appointed division master mechanic of Farnham division of the Canadian Pacific, with headquarters at Farnham, Que., succeeding **R. Walton,** transferred, effective April 15.

**F. P. Pfahler**, who has been chief mechanical engineer of the Railroad Administration, with office at Washington, D. C., has been appointed supervisor of locomotive maintenance of the Baltimore & Ohio, with office at Baltimore, and also the mechanical member of a committee appointed to investigate the feasibility of electrifying one or two of its divisions.

**George S. Edmonds,** who has been appointed superintendent motive power of the Delaware & Hudson, with headquarters at Colonia, N. Y., as noted in the *Railway Age* of April 30 (page 1330), graduated from Cornell University in 1895. He began railroad work shortly after graduation in the shous of the New York Central. Afterwards he served in the road and mechanical engineers' office of the same road. He went to the Delaware & Hudson in 1900 as mechanical engineer. He was appointed master mechanic in 1905 and retained that position until 1912, when he was appointed shop superintendent. On April 5, 1920, he became acting superintendent motive power and was promoted to superintendent motive power on April 21.

**Ernest V. Williams,** shop superintendent of the Buffalo, Rochester & Pittsburgh, who has been appointed superintendent motive power, with headquarters at DuBois, Pa., as announced in the *Railway Age* of May 7 (page 1385), served as an apprentice at the Brooks Locomotive Works, Dunkirk, N. Y., and afterwards as machinist for the Rome Locomotive Works, Rome, N. Y., prior to beginning actual railroad work. He then entered the employ of the New York Central as machinist at West Albany, N. Y. Shortly afterwards he was promoted to assistant machine shop foreman at the same place and then to assistant to the superintendent of shop. His next promotion was that of machine shop foreman, also at West Albany. Later he was transferred to Depew, N. Y., as assistant general foreman but afterwards he returned to West Albany as general foreman. He went to the Buffalo, Rochester & Pittsburgh on June 1, 1917, to accept his appointment as shop superintendent, the position he filled at the time of his recent promotion.

E. V. Williams

## Engineering, Maintenance of Way and Signaling

**E. S. Draper**, engineer of structures of the Boston & Albany, with headquarters at Boston, has been appointed principal assistant engineer, with the same headquarters, effective May 1, succeeding **L. G. Morphy,** retired.

**J. S. Lemond,** who has been appointed chief engineer, maintenance of way and structures of the Southern lines east, with headquarters at Charlotte, N. C., as noted in the *Railway Age* of March 5 (page 750), served as assistant to chief engineer maintenance of way and structures during federal control. Mr. Lemond was born in Walton County, Ga., and educated in a country school. He began railroad work on April 3, 1883, as section hand at Alcovy, Ga. Soon afterwards he went to the Southern as section foreman and served in that capacity until April 1, 1886, when he became work train conductor. He was appointed track supervisor in 1887, and road master in 1890. He was then promoted to superintendent and retained that position from July 1, 1899, until September 30, 1900. From then until June 30, 1906, he again served as roadmaster. On July 1, 1906, he became engineer maintenance of way and was appointed assistant to chief engineer maintenance of way and structures on January 18, 1917.

**O. T. Nelson**, who has been appointed chief engineer of the Atlanta & West Point, the Georgia and the Western of Alabama, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of March 12 (page 801), served as engineer maintenance of way of that road and others under the direction of Hale Holden, regional director, during federal control. Mr. Nelson spent about nine years in railroad construction work prior to entering railroad service. At the age of 26 he entered the employ of the Mobile & Ohio as supervisor of tracks. Nine years later he was appointed roadmaster of the Southern. Afterwards he went to the Georgia as superintendent maintenance of way. He also served in the same capacity for the West Point Route, now part of the Atlanta & West Point. He was then elected vice-president and general manager of the Elberton & Eastern and the Washington & Lincolnton and held that position when the railroads were placed under federal control. The position he filled from 1918 until the termination of federal control has already been mentioned above.

## Purchasing and Stores

**E. W. Thornley,** formerly supervisor of stores, United States Railroad Administration, has been appointed assistant purchasing agent of the Baltimore & Ohio, with headquarters at Baltimore, Md.

**D. C. Curtis,** prior to federal control inspector of stores on the Chicago, Burlington & Quincy, and during federal control storekeeper for the Northwestern Regional Purchasing Committee, has been appointed general storekeeper of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee Shops, Wis., succeeding F. J. O'Connor, who has been assigned to other duties. The changes are effective May 1.

**Charles R. Craig,** who has been appointed general purchasing agent of the Southern, with headquarters at Washington, D. C., as noted in the *Railway Age* of March 5 (page 749), served as purchasing agent from 1914 until the termination of federal control. Mr. Craig was born on October 12, 1872, at Richmond, Va. He received a high and business school education and began railroad work in 1889 as clerk in the stores department of the Richmond & Danville, now part of the Southern. He went to the Southern as storekeeper at Selma, Ala., in 1894, and retained those headquarters until 1897, when he was transferred to Richmond, Va. Afterwards he served in the same capacity at Charleston, S. C. In 1903 he became clerk in the office of the assistant general manager, at Washington, D. C., and in 1905 purchasing agent of the Lenoir Car Works, a subsidiary of the Southern. In 1909 he went to the Mobile & Ohio as purchasing agent, and remained with that road until 1914, when he returned to the Southern in the same capacity.

## Railroad Administration

**Edward A. Sweeley,** a member of the Railway Board of Adjustment No. 2, of the Railroad Administration, has resigned, to become mechanical superintendent of the Fruit Growers' Express.

# Obituary

**Fred. H. Tristram,** assistant general passenger agent of the Wabash, died on May 5 at his home in Delaware, Ohio.

**Herbert A. Boomer**, general manager of the Lake Erie & Western, with headquarters at Indianapolis, Ind., died in his private car in the railroad yards at Lima, Ohio, on May 6, at the age of 58 years.